COAL AGE

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Taking the Calder Out of Coal Control

BY THE TIME this is read the fate of the amended Federal Coal Act will have been determined by limitation of time. The Senate Committee on Manufactures after hearings lasting over a period of nearly a month has reported out the Calder Bill, in which they have not so much made amendments as elisions. As this is written we have but telegraphic reports of the action and have not yet had opportunity to read and study the amended bill and the recommendations of the committee reported as unanimous for immediate passage of the measure at the present session. As forecast some time ago, the new committee bill has deleted all provisions for Federal control during emergencies and all tax proposals aimed at elimination of the middleman, but has retained the requirement for the collection of full and current reports on costs of production and on profits. In other words, the measure is essentially along the lines of the Frelinghuysen Coal Commissioner Bill of last year, perhaps more drastic in some of its provisions, but to all intents and purposes designed to produce facts about the industry.

The committee is frank enough to say this bill is "not offered as a complete legislative solution" of the problem of preventing "a recurrence of the deplorable conditions to which the consuming public has been subjected, more especially during the past year." With respect to these conditions the committee advises it found no cause that "constituted either justification or legitimate excuse for the great advance in prices which occurred." The committee reports that high prices were participated in by operators, wholesalers and retailers, and a horde of speculators, but that not all operators, wholesalers or retailers took advantage of the situation, as many, particularly the operators of the larger class, confined their business to the contracts entered into at reasonable prices prior to the opening of the speculative market.

Paramount interest attaches to the assertion of the committee that Congress "has a manifest duty at this time" to bring about the publicity of costs and profits in the industry and to declare that "coal is a basic necessity, charged with public interest and use." If this view prevails in the Congress, if the inflamed attitude of the general public toward the coal industry persists, then we may fully expect the next Congress to give serious consideration to the regulation of the coal industry.

There is just one safe course to follow and that is for the men of the industry to assume that something will be done to or for the coal industry by the next Congress, and to immediately plan to take the offensive in the next round. Our idea of one way to do this is the recent manner adopted by the Knox County Coal Operators Association of Indiana in telling their story to the people of the state in a big, broad, open way through the local newspapers.

One of the commonest errors of the public with respect to coal, and one most provocative of misunderstanding of the situation, is the confusion of anthracite used at home and bituminous used in the factory, and their ignorance, through no fault of their own, of real conditions in the industry. They are suspicious, but what is being done to overcome their suspicion? They denominate every coal man as a "baron." What are you doing in an educational way to overcome this misconception?

The Futile Foreman

HAS anyone held a time clock over a mine foreman? He is one of the busiest men about a plant, yet about half his time is really wasted. Of the twelve hours which most foremen work few serve any real purpose.

Among the greatest of time wasters are transportational difficulties—locomotives and cars off the track or perhaps a wreck on the plane. No railroad could do business that had derailments as frequently as the average mine haulway. A little thought of the causes of these derailments would considerably lighten the foreman's duties—and incidentally enable him to increase the output. Unfortunately we have allowed it to be thought that these derailments are necessary. They should be exceptional. Cars should go to the places appointed for them without entailing any effort of supervision.

Another fault is inadequate power to handle cars. Gravity should be eliminated as far as possible, as it is an uncertain provision. Any uncertainty not only costs much money but distracts the foreman from his proper work. If certainty in operation were a watchword the work of the foreman would immediately rise to a higher level.

One of the many entries charged against a mine foreman's time would be the hours spent in breaking in new men and in finding working places for new employees, in short, in labor turnover. If this turnover were reduced the mine foreman would have fewer duties to perform and what he did do would be much more worth while.

And then when he has done his day's work he not infrequently goes home to a house so remote from the company's office that he spends an hour or more in the evening in making a trip to see the superintendent. He travels for a mile or even further over ill-lighted roadways or sidewalks to get to headquarters. If his home were near the office he could spend more time there or, what would be better for him and his family, more time in his home.

Let every superintendent think the matter over. How much of a foreman's time is profitably spent, and how much of the wasted time could be saved if his work were made more automatic and not frittered away in placing

men, replacing cars and plodding over ill-lighted and perhaps snow-laden pathways to and from the office? Lighten his labors and he will help to lighten the work of the superintendent and have more time to comply with the law.

In the space of a single editorial it would be hard to outline all the many ways in which the foreman's duties might be lightened. These are a few of them. Any superintendent with his eyes wide open, even without a time clock, will find many others.

A Voice from the Past

TAKING a long-range view of the problems in the bituminous-coal industry one finds such a range of opinion as to what is wrong and how to right the wrongs as the desire for Federal regulation expressed by the operators as long ago as 1910 and a sentiment for regulation of coal coming from the consuming public in 1920.

When the coal market was poor and the margin between cost and sales price was often a minus quantity and at best but a few cents, the producer was gasping for help from the highest source, the Federal Government; when margin was greatest and prices highest, the consumer called on Uncle Sam for help, and in some instances took matters into his own hands locally by attempting state regulation. From famine to feast and back to famine again, the causes for dissatisfaction, first to producer and second to consumer, are not difficult to locate, but whatever the cause or causes, the fact remains that somebody on one side or the other always is dissatisfied and wants Washington to intervene, and when Washington does intervene, as it did to the limit in 1918, not everyone is content. In 1920, when further effort was made by the Interstate Commerce Commission to regulate distribution and increase production, many in the trade and more without took a fling at that august body for interfering with business.

It is well in thinking of coal regulation in terms of such proposals as the defunct Calder bill, or even the hibernating Frelinghuysen measures, to bear in mind that there is another side to the story, and that the causes that operated prior to 1916 to make the operators look to Congress for relief are not cured.

In the first issue of *Coal Age* (Vol. 1, No. 1, Oct. 14, 1911, page 15) John H. Jones, then president of the Pittsburgh-Buffalo Coal Co., discussed the advisability of government regulation of coal prices, and after succinctly stating the highly competitive situation in soft-coal production suggested the fixing by the government of maximum and minimum prices and a determination of miners' wages based on the selling price of coal.

In a paper before the Eighth International Congress of Applied Chemistry at Washington in 1912, Samuel A. Taylor recited the conditions of production and distribution that make for waste in the bituminous-coal industry and said:

"If any person interested would take the time to investigate the cost of producing coal and the price at which it is sold they will very readily understand why the above condition continues to exist, but there are several remedies that may be applied to this condition of affairs. *First, there might be devised some plan by the National Government by which they could have general control of the mining situation.* I am not prepared at this time to suggest just how this could be done. There have been a number of suggestions, but they have been looked upon with considerable incredulity by reason of the fact that they have been brought forward and promulgated by coal operators or at least those interested in coal mines or properties and, as stated above, they do not have the same effect upon legislators for the reason that they believe that underneath their suggestions is a selfish motive and consequently little attention is paid to their suggestions.

"Another remedy, it seems to me, which is probably only a part of the first, is that the government through some sort of a *commission* should modify the resultant action of the present national law known as the Sherman Anti-Trust Law, so as to permit combinations, and by this I mean a combination that will in the end work out for the welfare of the whole community in that it will restrict or reduce the production of coal to the amount necessary to be consumed, and that it will permit, in selling of this coal, the obtaining of a price that will give to the men that labor at the mine a fair compensation for their work, together with all the safety obtainable; to the parties who have their money invested in the enterprise a fair return on their money, together with a sinking fund sufficient to pay back to them the investment which they have made in the mine by the time it is exhausted, and, third, guarantee to the consumer that he will not be overcharged for the fuel which he requires.

"This, while seemingly very easy, is in reality very difficult to obtain and will require a great deal of thought and time to the working out of these conditions successfully. But as matters stand today operators are fearful of undertaking any such proposition lest they be haled into court for acting against the spirit, if not the intent, of the Sherman Anti-Trust Law. If some such a *commission* were appointed, with power to act so that they were permitted to work out a *regulation* of the coal business, which is so important not only to the present generation but also to future generations, I believe the first step would be taken toward the true conservation of the fuel resources of our country."

It thus seems to be true that the trouble with the bituminous-coal industry is that it either makes too much money or too little. For this reason bankers are not interested in soft coal—even Jett Lauck has not thought that bituminous coal is controlled by Wall Street. One thing should be self-evident—whatever is done to help this "worst-functioning" industry must be aimed to fill up the low points and level off the peaks of demand, production, price and profit. Control of price is no remedy.

Although we now speak of the Calder bill and its highly objectionable proposals in the past tense, there is little dissenting from the opinion that more measures looking to regulation of the coal industry will be brought forth in the next Congress. Between now and then the men of the industry will look back over pre-war history and decide whether on the occasion of their next visit before a congressional committee they are going to have a program that is more than just plain opposition or whether they will come forward with a seasoned plan that can be put over.

If after sober thought the men of the industry cast the die for determined and everlasting opposition to any and all forms of paternalistic control or regulation, let it be with full knowledge of what the pre-war past bodes for the future. It is for the industry to decide, but the decision should not be delayed until another flare-up in Congress sounds a call to arms.

Small Mine Stores Run-of-Mine Coal with Derrick and Grab Bucket

Coal Is Piled About Thirty Feet Deep — It Is Loaded Directly Into Railroad Cars—By Use of a Dragline Bucket the Area Available for Storage May Be Greatly Extended

By Donald J. Baker
Wilkinsburg, Pa.

THOUGH the Irwin Gas Coal Co., of Greensburg, Pa., with mines chiefly in Westmoreland County, is in the aggregate a coal producer of fair size, it does not boast of any individual plants that would be regarded today as of large capacity. One interesting fact about these operations is that they have taken up the problem of the storage of coal at the mines and at some of their plants have already installed facilities for that purpose.

Before describing the storage methods at one of the typical operations of this concern, Mine No. 4 at Elrico on the Turtle Creek Branch of the Pennsylvania R.R. out of Trafford City it might be pertinent to note the mine-operating conditions, which explain why this corporation considered it justifiable to install storage facilities. While many of the tipples owned by this company are equipped for preparing and sizing the mine product, that at this mine supplies in the main only run-of-mine coal. As a result any breakage that may occur in loading is not regarded as important as if prepared sizes were being made or stored. The coal produced is sent mainly to Tidewater to be used as a steam fuel.

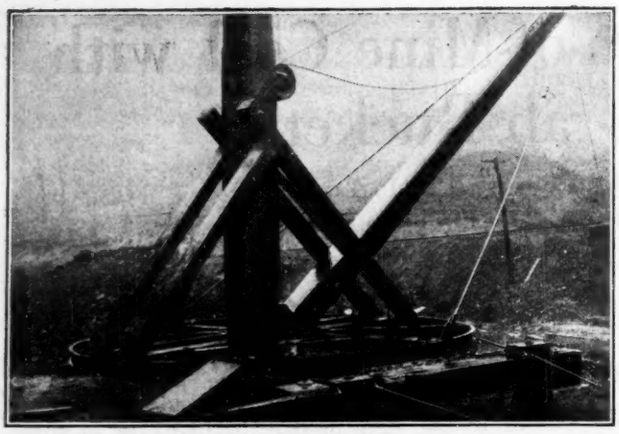
Instead of filling run-of-mine orders at every tipple, these orders are handled at plants designed and built especially for supplying this demand. By this means the company is enabled to operate more efficiently. Degradation of the mine product by breakage at these run-of-mine tipples, as already mentioned, is not a factor of importance, and this was regarded as a favorable situation for the installation of storage equipment. As a matter of fact, there is less breakage from the handling of coal to and from storage piles than is commonly supposed, if credence be given the reports of operators who have had experience in this matter.

Storage Equipment Inexpensively Installed

The storage equipment at the No. 4 mine was installed at extremely low cost, as readily may be imagined from the illustrations accompanying this article. Primarily the equipment, which was manufactured and installed by the Beckwith Machinery Co., of Pittsburgh, consists of an 80-ft. guyed mast derrick equipped with a 70-ft. boom and a 1½-cu.yd. Blaw-Knox "speedster" clamshell bucket. The mast is held in place by six guy cables each of which is attached to a "dead man" beyond the storage area. Both mast and boom are joined to a bull-wheel base, by which they are swung or revolved. The bull wheel is controlled by two cables which lie in a groove in its circumference and pass thence to a shed at the rear. Here a three-drum electrically- driven hoist

Derrick, Tipple and Storage Yard

With a plant of this kind there is no complicated machinery. It is so simple that the handy man around the tipple operates it with facility. The illustration shows the yard after the coal has been largely reclaimed.



BOOM BASE AND BULL WHEEL AT FOOT OF MAST

The wheel by which the boom is revolved is controlled by two cables from the rude engine shed shown in the center foreground of another illustration.

engine is direct-connected to a 52-hp. motor and also to a double-drum derrick swinger.

The operator of this equipment is a general utility man on the tipple. Thus it is not necessary to detail a man permanently to the manipulation of this machinery. The operative easily and quickly learns how to get full speed out of the apparatus. A round trip of the bucket in either the storing or reclaiming process does not consume more than a minute and it is possible to handle sixty tons per hour with ease.

When Cars Are Lacking Coal Is Stored

When cars are not available at the tipple the coal is dumped into a gravity chute which leads it to the ground. From that point it is picked up by the bucket and stored. The area that was selected for storage is a small gulley lying between the tipple siding and the main tracks of the railroad. The ground, which was uneven, has been leveled off and a concrete floor is now being constructed for the storage pile. This will prevent the coal from picking up any dirt while in storage and will also allow the bucket to operate more effectively. On the side of the storage yard adjacent to the tipple a 5-ft. concrete retaining wall will be built, so as to give the yard greater capacity.

Will Add Receiving Hopper to Tipple

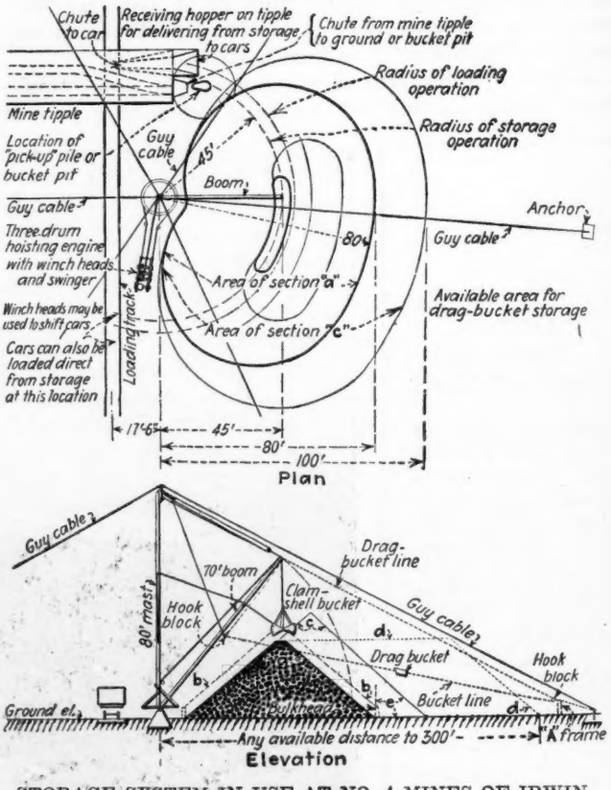
In the near future the tipple will be equipped with an open-top receiving hopper at its rear, so that the coal being recovered will then pass directly into the building before being loaded. At present the railroad cars must be filled from the bucket. This is not desirable from the standpoint of spillage. The three-drum hoisting engine and swinger is located at such a point that its winch heads may be utilized if desired for shifting railroad cars.

The area that may be utilized for storage with a system of this kind is large. Whether the Irwin company will avail itself of the full storage facilities at this mine is still a question. On the line drawing accompanying this article storage capacity is shown which is large even assuming that the shovelman makes no use of his opportunity to throw the bucket in operating the shovel. Section "a" of the drawing shows a cross-section of the area that can be completely reclaimed by the bucket. In this case the storage capacity of the yard would be about 2,000 tons. Section "b" shows a method of increasing the reclaimable storage area by means of the retaining bulkhead, to which reference has already been made. This will be constructed at the toe of the slope of the coal pile. By building a wall 5 ft. in height, as the Irwin company contemplates, storage is increased so that the capacity of the yard will be 3,000 tons, or 50 per cent in excess of that shown in section "a."

Section "c" shows a storage area that might be utilized by the bucket in stocking-out but not in reclaiming. This area would accommodate 6,000 tons of coal but it would be somewhat undesirable to use all that area as means other than the shovel would have to be used for the recovery of nearly 50 per cent of the pile. Section "d" of the drawing shows a method that could be followed in utilizing all available storage space by using a dragline bucket as an auxiliary to the clamshell in conveying coal to and from the pile "a."

Change from Clamshell to Dragline Bucket

To make the change from the clamshell to the dragline bucket, the two control ropes are detached from the former; one is reeved through a snatch block anchored to a "dead man" and passed over an "A" frame. This is attached to one end of the dragline bucket. The other rope also is passed through a snatch block attached to a loose link on the boom end and is led thence to the other end of the dragline bucket. By means of two drums on the hoisting engine the dragline bucket is shuttled back and forth in conveying the coal to and from pile "a." The tail-end "A" frame is moved up on the coal pile as the height increases. Thus any available space in any radial direction from the derrick may be made available and the total storage capacity is in a sense unlimited. With the use of a dragline bucket as described the system is highly flexible.



STORAGE SYSTEM IN USE AT NO. 4 MINES OF IRWIN GAS COAL CO. AT ELRICO, PA.

This simple storage system enables the operator to stock or reclaim about sixty tons per hour. By the use of a dragline bucket it is possible to spread the coal over a larger area than has been used hitherto at the Elrico plant.

By Making Boom Horizontal, Surface Type Of Shovel Is Adapted to Mine Work

The Brown Electric Shovel Is Provided with a Horizontal Boom, an Automatic Dipper Trip and a Conveyor and Will Work in Coal Only Five Feet Thick, Will Place Itself and Move Its Own Cars to and from the Sidetrack.

By D. C. Ashmead
Wilkes-Barre, Pa.

Because of the decrease in the supply of labor throughout the country and the increasing wages that this labor continually demands, it is becoming more and more advisable to devise ways and means for reducing the amount of muscular energy required in the mining and loading of coal underground. Undercutting and loading are probably the two jobs least sought for in American coal mines, and it is becoming increasingly difficult to procure men who will perform this kind of work.

Many machines have been designed for the loading of coal. Some of them both mine and load the material, while others merely load it. In general, no difficulty has been encountered in devising an apparatus to place the coal upon the cars, the main disadvantage of all such devices being that it is impossible to feed cars to the machines with sufficient rapidity to make mechanical loading practicable. As a result such machines stand idle a goodly portion of the working day waiting for the loaded cars to be taken away and their places filled by empties. Furthermore, these machines are, as a rule, cumbersome and difficult to move because of their great weight.

Mr. Brown, the superintendent of strippings for the Locust Mountain Coal Co. near Shenandoah, Pa., after making a study of the use of steam and electric shovels for coal loading, arrived at the conclusion that a machine of this kind could be so designed that it could be employed in comparatively thin measures. Low electric shovels have been used underground in thick beds and have given excellent results, but they are too large and too cumbersome to be used in thin deposits.

Taking all these things into consideration, the problem that presented itself was to design a machine that would work in beds of coal as thin as 5 ft. After three years of study and thought Mr. Brown has laid his plans and obtained patents upon his device, and the Locust Mountain Coal Co. has now started the construction of a shovel to work in a 6½-ft. bed of coal. This size was selected because it can be used in any of this company's underground operations.

Boom Is Not Set Inclined but Horizontal

In general the lines of the ordinary steam shovel have been followed, but the boom, instead of being at an angle, is horizontal and the dipper arm, instead of being operated as on an ordinary machine, works only forward and backward along the full length of the boom. The bucket is of the ordinary steam-shovel type. Fig. 1 shows a model of the new underground loader, the dipper being in the position which it would assume at the commencement of work in a room. The bucket is filled in the ordinary manner and when loaded is raised and run backward by means of the worm to the hopper shown at the front of the truck. Here it is emptied by dropping the bottom in the ordinary manner. It is not necessary to trip the bottom by hand, as is usual with the ordinary shovel. As the dipper has to come to the same point every time it is emptied, it may be tripped automatically.

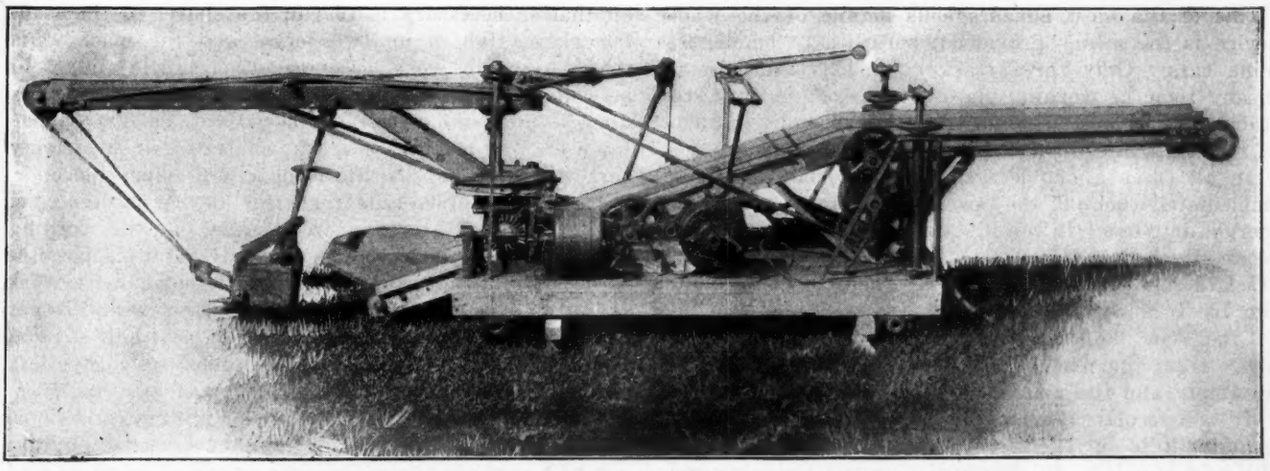


FIG. 1. ELECTRIC DIPPER SHOVEL MAKING A LOADING STROKE

Underground shovels are of four main types—conveyor, scoop and dipper shovels and the shovel with gathering arms. The conveyor shovel gets under the coal and lifts it off the floor. The scoop shovel has buckets on a conveyor chain. The dipper shovel gathers the coal by an action similar to that of a miner when shoveling. On the other hand, the machine with gathering arms forces the coal toward the conveyor, which then draws the coal up and toward the mine car. The shovel here illustrated is of the dipper type. The boom has a wide lateral movement but the loading conveyor is kept in line with the track. This is essentially a track loader, as are most loading machines. Illustration shows the machine on the lawn of the inventor.

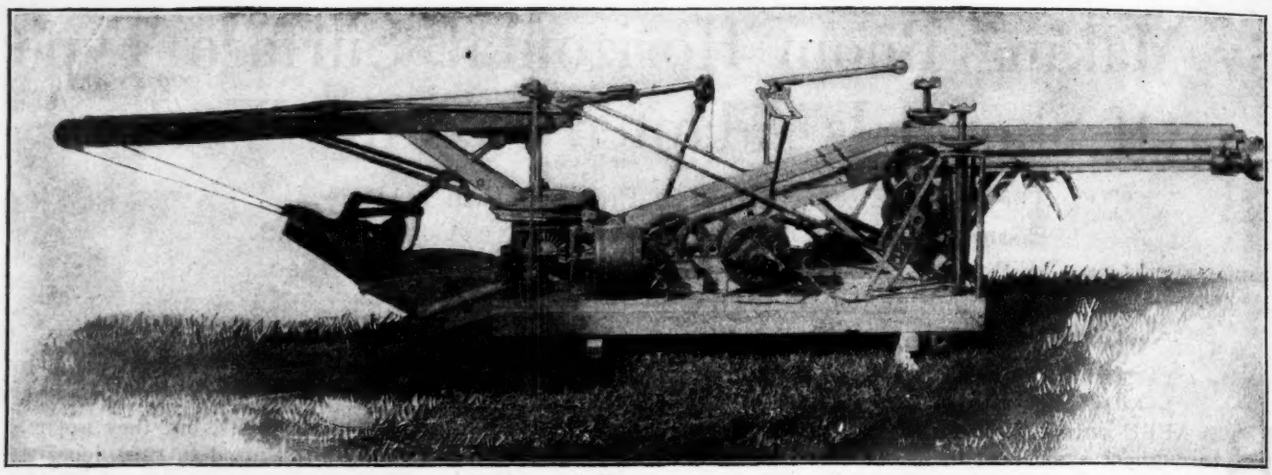


FIG. 2. MACHINE DUMPING A DIPPER LOAD INTO CONVEYOR OR HOPPER

From the hopper the coal is lifted by a conveyor. Note the two jacks, which form part of the machine and keep it in place. The new machine now being constructed will have two motors, one for dragging the dipper forward and for swinging the boom, and one for propelling the dipper arm. There are three motors on the machine illustrated.

Fig. 2 shows the dipper discharging into the hopper. The boom swings to either side, and to dump the bucket it is not necessary to bring it back to a central position, for it can be discharged into the hopper from an angle. The shovel now under construction has two motors, whereas the model shown in the accompanying illustrations is provided with three. The main motor will be employed in digging and by means of a friction clutch will swing the boom. The other motor will be used to propel the dipper arm backward and forward by means of the worm.

When the coal or rock, as the case may be, is dumped into the hopper it will be picked up by a rubber conveying belt and discharged into a mine car placed at the rear of the machine. The main motor is so arranged that by means of a clutch it may be made to drive the supporting wheels, thus propelling the machine from place to place in the mine. The traversing speed will be 300 ft. per minute. As will be noted in the illustration, two jacks are provided at the rear end of the machine, so that it may be held securely between roof and rail.

SHOVEL WILL PLACE ITS OWN MINE CARS

One of the most advantageous details of the whole device is the means provided wherewith to handle the mine cars. Only three track conditions are possible in any room or working place. These are: First, the track may be level; second, the grade may be in favor of the loads, and third, it may be against the loads.

In all cases a double track is employed to a point immediately behind the machine where the two are merged into one. In the first case a jack with a snatch-block attached is placed near the far end of the loaded track, a rope from a crab on the loader is run through the block, and when the mine car is loaded the end of the rope is attached to it and the car is pulled away from the machine. The rope is next hooked to an empty and the machine pulls it into place.

In the second case, as the loads can be dropped by gravity, it is only necessary to pull the empty cars to the proper point. In the third case the jack is merely used to pull the loaded cars away, the empties being dropped to the machine by gravity. By this means it is not necessary for the loader to be idle as long as empty cars are within reach of the cable.

Furthermore, it will be unnecessary to have a locomotive in continual attendance. This in itself means an appreciable saving, as one man can attend to the car supply. Moreover, this will permit the locomotives which ordinarily would be used for shifting to assist in taking the loaded cars to the outside. By experiment it has been found that three dippers full of coal or rock may be taken in one minute and loaded into mine cars.

The machine can be built sufficiently small to operate in a heading that is only 5 ft. wide and 5 ft. high. That which is now being constructed will have a height of 6½ ft. and a bucket holding ¼ cu.yd. The boom will be about 12 ft. long, thus enabling the machine to load coal or rock in a heading 16 ft. wide. By increasing the length of boom, coal from a wider room may be loaded.

A shovel of the size and type being built will be 22 ft. long over all and will weigh about six tons. It will have a capacity of three dips of ¼ cu.yd. per minute, or approximately ¾ ton of coal. As the cars of this company hold five tons, the shovel can load one car every seven minutes.

Little time will be lost in setting up the machine, as all that is necessary is to run the shovel to the loading place, tighten up two jacks, and the machine is ready to begin work. Comparatively little time will be consumed in moving from place to place, for, as above stated, the traversing speed will be 300 ft. per minute. The machine also may pull after it any empty cars that may be left unloaded in a previous place.

It is, of course, true that this device has not yet been tried out on a commercial scale, but the working model here shown has demonstrated that it is possible to do satisfactory work, and, in fact, much more work than was expected. It is hoped that the new and larger machine will be completed within the next few months so that it will be possible to get more accurate data as to just what output may confidently be expected from a shovel of this type working under mining conditions.

In conclusion I should add that the Locust Mountain Coal Co. regards the new device as one of merit and of possibilities and intends to give it a good trial, but it is little disposed to make predictions as to its value till its ability to load coal economically has been made manifest under actual mining conditions.

Conserving Coal Through the Use of Gas

Industrial Fuel Engineering Service an Important Co-Operative Step in the Solution of Fuel Problems—Elimination of Waste Through Easy Regulation and Control of Heat Within Narrow Limits Cited as Advantage of Gas Over Coal

By W. A. Ehlers, M. E.*

MANAGERS, engineers and others responsible for the efficient operation of plant equipment who still adhere to the antiquated methods of their predecessors in the matter of fuel economy are contributing largely to the waste of our natural resource—*coal*. It is safe to say that the majority of coal firing at the present time is done with little thought of efficiency. Many boiler plants are not carefully investigated for stack losses, and industrial heating furnaces are wasteful in fuel consumption and in most cases are inadequately insulated.

This condition in the utilization of coal has been closely watched by central-station fuel plants and local gas companies, and during the last ten years wonderful progress has been made in the application of gas to industrial heating. Especially was this true during the war. Not that gas was unpopular for industrial work before the war or its value unrecognized, but the war gave it an impetus that it might never have received in time of peace, and more progress was made in its adaptation to manifold processes during that period than ever before.

Utilizing Gas for Industrial Heating

Ever since the introduction of gas in the home for cooking, heating and lighting there has been a healthy development of its use for industrial purposes. It has grown by leaps and bounds until its use may be noted in almost every branch of industrial work where fuel is required. Ten years ago the consumption of a million cubic feet of gas by one customer at a single plant in one month was looked upon as phenomenal; today it is quite common to find single industrial plants burning six to eight million cubic feet of manufactured gas in a single month.

Gas company managers were not slow in appreciating the great possibilities of their product for industrial heating processes, and in the larger cities industrial fuel departments were organized and placed under the direction of competent sales engineers. This position required a man of unusual qualifications, embodying the qualities of a first-class salesman with wide experience and extensive knowledge of the technique of industrial processes.

The development of this activity of the gas industry has been carried to such an extent that in all the larger cities of the United States where gas is manufactured there may be found a well-organized industrial department of the gas company devoting its entire time and resources to the study and development of gas-fuel application.

Not long after these departments were organized and began their activities there was a need felt for a central co-ordinating agency where data and facts could be collected and disseminated to others engaged in similar work. This, together with the manifestation of a desire on the part of the smaller gas companies for assistance in applying gas to industrial heating processes, led to the establishment of an industrial fuel engineering service by the National Commercial Gas Association in March, 1916.

The activities of the National Commercial Gas Association were, however, merged into the American Gas Association in 1918 and the service was continued along the same lines. To make the industrial fuel engineering service operative the association added to its office staff a mechanical engineer of considerable experience in manufacturing processes and the utilization of gas for industrial heating operations. The main object of the movement was to give practical assistance to the smaller companies by providing them with an engineer who

*Industrial fuel engineer, American Gas Association.

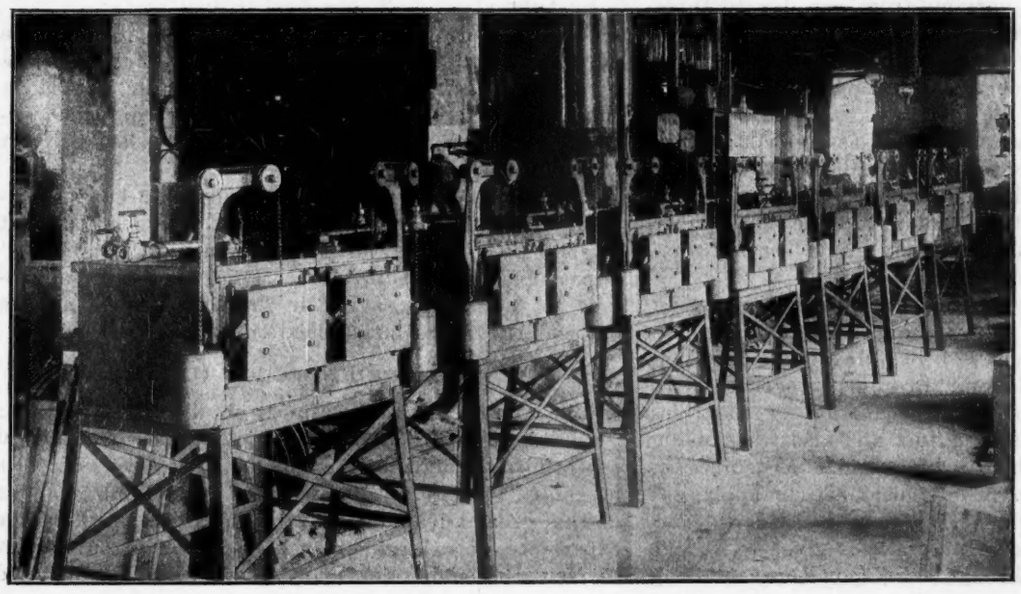


FIG. 1

Rivet Heaters Fired by Gas

This battery of double-chamber rivet heaters is part of the equipment of a large boiler plant. When gas is used for rivet heating, scaling may be reduced a minimum through perfect control of combustion.

FIG. 2. GAS-FIRED FURNACES FOR TEMPERING BEARINGS

could go to them for whatever length of time they desired and thus make it possible for them to obtain a service comparable with that maintained by the larger companies where one or more men are continuously employed. A reasonable per-diem charge is made for the service of the association's engineer when engaged upon field work, to which is added his traveling and living expenses while on the field engagement.

It has never been the intention of the association to conduct this department for profit, rather the idea has been to be of real assistance to the smaller gas company, and therefore the service has never been entirely self-supporting. It is gratifying, however, to be able to say that fifty-seven gas companies have availed themselves of this opportunity and purchased the service in periods varying from one day to three or four weeks. Moreover, a number of companies depend entirely upon the association's engineer for advice, and he has made as many as ten return visits at different times.

By the above plan the American Gas Association has placed at the disposal of even the smallest gas company a service which it could not otherwise obtain and which is offered at a low cost, so that it has the opportunity of offering to its local manufacturers a service comparable with the larger cities.

Another activity of the industrial fuel engineering service is to maintain a "Cost and Data File" in the headquarters office, where is kept all available information on the many industrial processes, together with facts concerning the cost of production of the commodity when using gas as a fuel and also when using a competing fuel. This is of valuable assistance to those companies which have undertaken to apply gas fuel to processes in which they have had no previous experience. Valuable assistance also is given to a large extent to companies through correspondence, advising on special applications and in many instances designing equipment for special needs.

Many times the question is raised: "How can gas compete in manufacturing plants with coal, coke or oil, which contain many more heat units when calculated on the basis of the number of heat units obtainable for a given cost?" The answer in most instances is as follows:

(1) It eliminates waste.

(2) It gives in most cases a greater production for the same period of operation.

(3) It cheapens production.

(4) It improves the working conditions.

Waste means loss. Modern methods are being adopted everywhere with the object of eliminating waste. This is brought about with gas fuel in two ways:

(1) The heat of combustion may be applied to the work at the point where it will be most effective. The temperature is subject to close regulation, indeed in many instances it may be automatically controlled between narrow limits. Thus there is less loss of heat from the fuel consumed.

(2) With correct heat application and accurate temperature control there is much less waste on account of spoilage. The day of the monumental "scrap heap" is passing. Manufacturers are quick to see the advantage to them in a saving in "rejects." This applies particularly to the larger heat-treating operations.

Increase in Production Obtained

Likewise greater production is obtained in two ways:

First, the rate of combustion can be maintained uniformly throughout the day, and it never becomes necessary to wait for a slow fire. A striking example of this great advantage may be well illustrated by the experience of a large brass and copper manufacturer in New England. For many years this company had

been using coal-fired furnaces for brazing brass tubing. The fire in each furnace was maintained by the operator who did the brazing. These men were required to come an hour and a half earlier every morning in order to get the furnaces ready for brazing at seven o'clock. Besides, many times during the day the fires would get low and work would have to stop until they were brought up again. The local gas company called for the industrial fuel engineer of the American Gas Association, and after a careful study of the situation the furnaces were redesigned, gas applied and thereafter no more trouble was encountered. Thus, with the same amount of labor, working a less number of hours, greater production was obtained.

The other way in which production can be increased is by changing the rate of combustion. This applies to the larger furnaces, particularly those for "case-hardening" and "pack annealing." In this operation the furnaces are loaded with a large amount of material at one time and unless the temperature is raised to an excessive point previous to loading, the large amount of cold material when first placed in the furnace will absorb heat so rapidly that in striking a heat balance the temperature of the furnace will fall very rapidly. With the gas-fired furnace the rate of combustion may be changed momentarily, and this condition is easily taken care of.

Why Production Cost Is Lowered

The cost of production is less because more marketable material can be produced with the same labor and overhead expenses. The capital investment is less because the fuel is delivered as used and paid for monthly. There is no outlay for stored fuel. Other fuels require large storage space and depreciate when stored very long. Less labor is required. With gas there is no stoking, clinkering or removal of ashes. Valuable floor space is saved by eliminating storage of fuels and by the use of smaller furnaces. Gas furnaces do not require as much floor space as other furnaces.

A high standard of health and efficiency is one of the most important essentials in the improvement of the industrial output. Operators like gas furnaces because they are clean and easy to operate. There is less smoke and the shop may be kept cooler, all of which makes for better working conditions and a more contented spirit among the employees.

Basis of Comparison in Fuel Costs

The fundamental principle upon which success in competitive industry is based is to produce at the lowest unit cost. It matters little what the price of coal or coke is per ton, oil per gallon, or gas per thousand cubic feet. The method of applying the heat of combustion in any case is different. Therefore, it is a fallacy to undertake to compare these fuels on the basis of their B.t.u. content.

Industrial heating with gas is a subject about which very little is known by the majority of practical shopmen. Indeed this criticism may be applied to many metallurgical engineers. A mistake too often made is that in order to use gas in a furnace it is only necessary to take *some* air, mix it with *some* gas and burn it with any old kind of a burner. This method does not bring satisfactory or economical results. Gas is a combustible mixture requiring for complete combustion a definite amount of air, supplied regularly and at uniform pressure. The pronounced failure of a gas-fired furnace or appliance to do certain work is more often the fault of the man who uses it than of the fuel. The location and design of the burner and the method of premixing the air and gas are two of the most important things to be considered in the burning of gas.

The location and design of the burner depend entirely upon the character of work and amount of gas to be consumed. Mixing of the air and gas should preferably

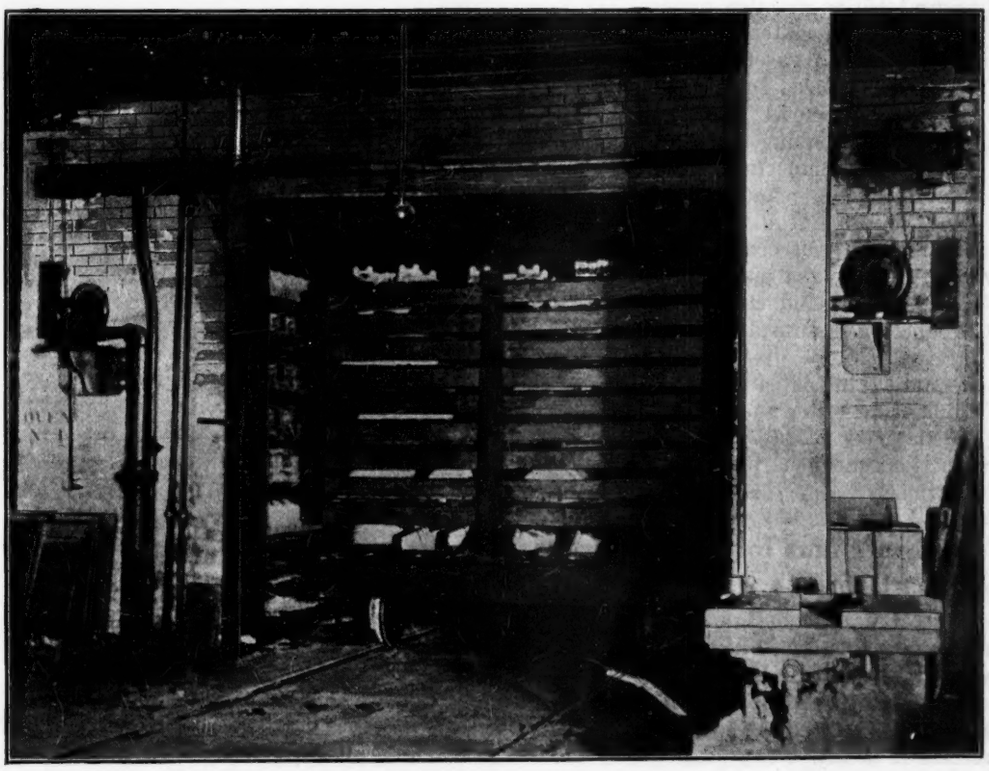


FIG. 3

Gas-Fired Core-Drying Oven

This oven is 16 ft. wide, 10 ft. high and 24 ft. deep. It has shelves 3 ft. wide on both sides and back, extending from the floor to the roof and accommodates two 10 x 10 ft. car-type trucks in the center space.

be done by automatic mechanical means. There are several approved devices to be had for this purpose. Air at high pressure should never be used. Best results can be obtained with air at one and a half pounds pressure per square inch.

The old method of mixing by the use of a T-pipe fitting, with gas connected to the stem, air to one side, and the air-gas mixture let out the other side of the T, is wasteful and unsatisfactory. The mixture is subject to the movement of the valves on the air and gas line, the slightest change of which affects the resulting mixture, although the volume of the mixture might remain the same. The average operator has an indefinite idea of the proper mixture as shown by the character of the flame; even skilled men are unable to get the same character of furnace atmosphere in repeated firings. By a mechanical mixing device the ratio of gas to air can be fixed according to the character of furnace conditions desired, and when so set it becomes only necessary for the operator to turn one valve on or off to obtain more or less heat.

Space will not permit of a description of the large gas-fuel installations that have been made in recent years. The photographs shown are intended to illustrate in a general way some of the many uses of gas for shop work and industrial heating.

A battery of seven double-chamber gas-fired rivet heaters installed in a large boiler plant is shown in Fig. 1. Gas is the best fuel for rivet heating because with a control of the combustion products the scaling of the rivet is reduced to a minimum.

Depicted in Fig. 2 is a large battery of tempering furnaces fired with gas in a plant manufacturing bearings at Toledo, Ohio.

A core oven 16 ft. wide, 10 ft. high and 24 ft. long, heated with gas, is portrayed in Fig. 3. Four years ago the industrial fuel engineer of the American Gas Association made a general survey of this plant, the largest manufacturers in the world of the most complete line of railway and track appliances, such as gasoline motor cars, inspection cars, hand cars, push gates, electric lights, etc. At that time coal, coke and gasoline were used almost exclusively. Today gas is used for thirty-five different processes, including metal melting, annealing, brazing, carbonizing, core baking, forging, japanning, motor testing, hardening, tempering, etc.

In a large copper-wire manufacturing plant in New York State I have converted several large coal-fired muffle furnaces to gas fuel. The price of coal at that time was about $6 per ton delivered to the plant. The rate for gas was about 90c. per thousand cubic feet. It was cheaper per unit of production to anneal with gas than with coal.

The foregoing only inadequately indicates hundreds of ways in which gas is supplanting other fuels. It is displacing other combustion material because it eliminates waste, speeds up production, cheapens production and improves working conditions.

A Handy Portable Power Plant for the Driving of Small Units

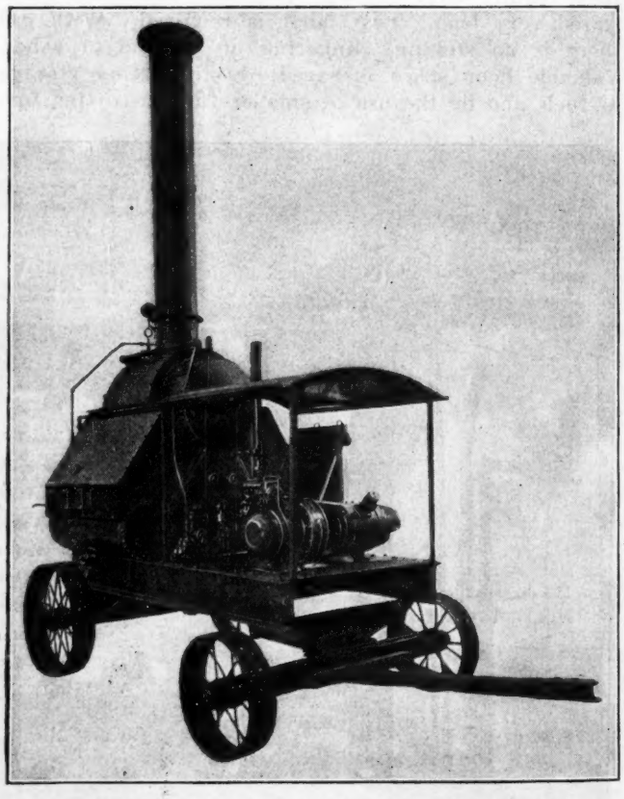
AN EASILY transported power unit designed for driving the small portable conveyors used in certain classes of mining is illustrated in this article. It may be employed, of course, for many other purposes than those for which it was originally designed. Though it had its origin in South Africa it is now being adapted to the many needs of this character which are encountered in the mines of this country.

A portable power unit can be advantageously used at strippings, where it can be set to void the surface sumps or to provide for lighting, if the pit is operated at night. It will be found of value at plants under construction, where it can be used to drive saws, light the operations, pump out drifts, slopes or foundation pits, run a small fan or even supply power for haulage or hoisting purposes. It has a definite availability at isolated drifts which will ultimately connect with the main workings and where, consequently, no permanent plant will ever be put in. It may be used to drive conveyors in sand pits or to assist in prospecting a property by shaft sinking. In case the town lighting breaks down such a unit can be used temporarily to supply the need for electric current.

Hitherto power for this purpose was furnished by the old-fashioned reciprocating engine and portable boiler with belt connection to the driven machine. The object of the Ludlum Dynomobile, as this unit is called, is to realize the utmost economy in power generation, high economy and great flexibility in delivering the energy thus produced to the driven mechanism.

The unit consists of a special type of water-tube marine boiler, a steam turbo-generator, a switchboard, boiler-feed pump, feed-water heater, condenser and, where the highest economy is sought, a superheater. All these elements are mounted on a steel frame supported on wheels. The complete plant is extremely simple in construction and operation, is free from vibration and practically "foolproof."

The type of marine boiler employed has gained wide acceptance in the maritime world by virtue of its high



PORTABLE SELF-CONTAINED POWER PLANT

Mounted on a small truck is a water-tube marine boiler for rapid steam generation, a steam turbo-generator, a switchboard, boiler-feed pump, a feed-water heater, condenser and, if desired, a superheater. It can be set to work far from any other source of power and will burn any kind of fuel.

economy, simplicity and compactness. In the unit illustrated the boiler was designed for burning wood, the combustion chamber being unusually large. The outfit, however, can be furnished for burning any kind of fuel. The combustion chamber is entirely surrounded by the water-filled steam-generating parts of the boiler. This construction not only assures high economy but also does away with all fire-brick furnace lining. The latter feature is of special value in a portable plant, as transportation over rough roads would be likely to break or dislodge the fire brick.

The high efficiency of the boiler and turbo-generator, as well as its compactness and light weight, makes this unit a most economical and desirable one for portable power purposes, as it can be located near its source of fuel and the energy developed electrically transmitted to any reasonable distance with a minimum loss. It is expected by the builders that this new high-duty portable equipment will supplant the European outfits extensively used in foreign countries consisting of an internally-fired boiler of high efficiency, and a reciprocating steam engine embodying many refinements making for economy. In spite of the fact that these are heavy and costly, they have found extensive use abroad because of their economy.

The weight of the Dynamobile is only about one-third that of units of the type referred to and its price is much lower, while its efficiency is higher. The outfit illustrated is of 10 kw. capacity. Larger sizes up to 200 kw. are furnished to supply either alternating or direct current. The manufacturer of this handy plant is the New York Engineering Co., 2 Rector St., New York.

Pennsylvania Coals and Shales Greatly Vary in Their Content of Oil*

Comparison of Oil Resources of Pennsylvania and the Bituminous Minerals of Other States—Eastern Coals and Shales Were Distilled Before Man Appeared on the Earth

BY GEORGE H. ASHLEY† AND CHARLES R. FETTKE‡

IN ORDER to assist in the solution of the oil and gas problem, the State Geological Survey of Pennsylvania has been conducting a series of experiments to determine the amount of oil obtainable from Pennsylvania coals and black shales which will be of interest to coal men. A preliminary statement of the results of these experiments is given in this article. For purposes of comparison the results of similar tests made in the same way on the cannel coals of other states and on the rich oil shales of the West also are given.

The results show that Pennsylvania is not well supplied with rich oil-producing coals or shales. The conditions that produced the valuable field of anthracite in the eastern part of the state and the high-carbon coals in the eastern part of the bituminous fields drove the oil and gas out of the black shales of those regions, so that satisfactory quantities of oil could be obtained only from the coals and black shales in the extreme western and northwestern counties of the state.

The experiments show that anthracite coal will yield no oil on distillation, nor will the black shales of the central and eastern parts of Pennsylvania. This has been one of the facts that have led geologists to believe that those parts of the state contain no commercial supplies of petroleum or natural gas.

The coals and black shales of the counties lying immediately west of the Allegheny front—Tioga, Lycoming, Clinton, Center, Clearfield, Cambria and Somerset—likewise give little promise, yielding only from two to twelve gallons of oil per ton of coal or shale. The cannel coals in those counties are "lean cannels" or "semi-cannels," differing chemically but little from the bituminous coals of the same area.

Better results are obtained from the coals and cannel shales within the main oil and gas field of the state, including Allegheny, Armstrong, Beaver, Butler, Fayette, Greene and Washington Counties. In general, the best results are obtained from the coals and shales of the region north and west of Pittsburgh, corresponding to the area of high-gas coals. The bituminous coals of this area yield from twenty to nearly forty gallons of crude oil to the ton of coal, or less than one barrel of forty-two gallons.

In this area there are many small deposits of cannel coal, some of which yield over one barrel of oil per ton of coal. The cannel coal at Cannelton, Beaver County, the richest source of oil by distillation yet examined in the state, yields in the test up to a barrel and a quarter per ton of coal. In this connection it must be remembered that it has not always been possible to obtain commercially as much oil from a given rock as the small-scale laboratory test indicates should be obtained, due to the difficulty of properly heating a mass of rock more than a few inches in depth. Some of these black shales forming the roof of coal beds are of considerable extent, though only a few feet thick. These extensive roof shales are, however, as a rule, poor in oil.

Here and there in western Pennsylvania there are what have been called "cannel shales," in reality high-ash cannel coals that yield from fifteen to forty-five gallons of oil to the ton. Unfortunately the deposits of cannel shales, like those of cannel coals, are very limited in extent, usually amounting to less than 500 acres in any one deposit, and lying usually in narrow belts or channels. Such deposits may have a thickness of 5 to 10 ft. in the center but commonly thin rapidly to either side. The cannel coal and the cannel shale at Cannelton have been mined for a long time, so that the original body of coal and shale has been much reduced, if not nearly exhausted. A table showing these results may be found on the succeeding pages.

*Article originally entitled "Oil from Pennsylvania Shales and Coals."

†State Geologist of Pennsylvania.

‡Assistant State Geologist of Pennsylvania.

Oil, Water, Ammonia, Gas and Residue Obtained Per Ton of 2,000 Lb. on Distilling Certain Coal and Shales

Locality	Description of Sample	Description of Residue	Oil, Gal.	Water, Gal.	Amm'a Lb.	$(NH_4)_2SO_4$, Lb.	Total N. %	Gas Cu.Ft. 0 Deg. C. 760 mm.	Residue in Lb.
Allen County, Kentucky									
On Barren River, east of Cedar Springs	Bit. shale, Chattanooga black shale from outcrop	No tendency to coke	6.6	7.3	1.08	4.19	.....	1,183	1,759
Montgomery County, Kentucky									
Near Means P. O	Bit. shale, Chattanooga black shale from outcrop	No tendency to coke	11.6	11.6	1.90	7.37	0.55	1,297	1,710
Macon County, Tennessee									
On Long Fork Creek near Redboiling Springs	Bit. shale, Chattanooga black shale from outcrop	No tendency to coke	10.5	5.8	1.41	5.47	0.50	1,121	1,750
Mahoning County, Ohio									
American Fire Clay & Products Co.'s Mine, Canfield Township	Can'l coal (Old Hickory Bed)	Very slight tendency to coke	46.1	16.3	2..87	11.12	.....	3,139	1,301
	Can'l shale	No tendency to coke	44.0	11.3	2.39	9.29	.....	2,827	1,357
	Can'l shale	No tendency to coke	28.7	11.1	2.13	9.18	.....	2,340	1,494
Morgan County, Kentucky									
Near Redwine Station	Can'l coal	Very slight tendency to coke	59.1	14.4	1.68	6.51	.....	2,377	1,232
Garfield County, Colorado									
Grand Valley	Oil shale from Green River formation	Cokes to a soft greyish dull mass	66.6	6.7	1.88	7.23	0.96	3,846	1,082
Uinta County, Utah									
Vernal	Oil shale from Green River formation	Cokes to a soft greyish dull mass	71.6	10.1	2.10	8.15	1.29	4,411	1,027
Nova Scotia									
.....	Oil shale	Cokes to a soft greyish dull	50.6	5.5	2.67	10.34	157	3,244	1,176
Allegheny County									
Pittsburgh Plate Glass Co.	Bit. coal, Upper Freeport	Hard porous coke	30.1	16.2	2.34	9.08	1.62	4,209	1,400
Creighton Mine, Creighton	Cannel coal above bit. coal	No tendency to coke	33.3	11.9	2.25	8.73	0.95	3,313	1,493
	Cannel shale above bit. coal	No tendency to coke	13.6	11.1	1.27	4.93	0.43	1,841	1,684
Bessemer Coal & Coke Co.'s No. 2 Mine, Russelton	Bit. coal, Upper Freeport	Hard porous coke	27.0	18.2	1.99	7.70	.....	4,886	1,386
	Bone in bit. coal	Slight tendency to coke	13.9	14.3	1.21	4.71	.....	2,552	1,623
	Cannel coal and cannel shale above bit. coal	No tendency to coke	28.4	11.3	2.75	10.68	.....	3,024	1,529
Superior Fuel Co.'s Mine at Russellton	Bone in bit. coal	Slight tendency to coke	18.1	12.3	3.26	12.80	0.99	3,382	1,580
	Cannel coal above bit. coal	Slight tendency to coke	39.1	9.2	2.55	9.74	1.29	3,609	1,446
	Cannel shale above cannel coal	No tendency to coke	19.9	9.2	1.25	4.87	0.62	1,966	1,575
Armstrong County									
Sandy Creek	Elk Lick coal (weathered)	Hard porous coke	32.6	16.3	2.81	10.91	.....	3,958	1,357
	Bit. shale at base of Birmingham shale (weathered)	No tendency to coke	6.9	14.2	1.42	5.51	.....	1,417	1,712
Pittsburgh	Bit. shale over Pittsburgh coal	No tendency to coke	8.5	15.2	1.18	4.58	.....	1,107	1,728
Pine Run Coal Co.'s Mine No. 10, New Bethlehem	Bit. coal, Upper Freeport	Hard porous coke	23.8	11.3	2.23	8.71	1.50	3,624	1,428
	Bony coal above bit. coal	Slight tendency to coke	17.0	12.2	1.92	7.45	.....	2,590	1,577
	Cannel coal above bit. coal	Very slight tendency to coke	27.3	12.2	2.90	11.27	0.98	3,756	1,524
	Cannel coal, Upper Kittanning	Slight tendency to coke	34.4	9.4	2.30	8.93	1.25	3,485	1,481
Pine Run Coal Co.'s Mine No. 9, New Bethlehem	Curley or Birdsey Cannel coal	Slight tendency to coke	35.6	8.2	1.69	6.55	1.62	3,377	1,415
	Cannel shale above cannel coal	No tendency to coke	29.1	8.6	1.51	5.87	0.78	2,319	1,564
	Bit. coal below cannel coal	Hard porous coke	30.4	14.9	3.12	12.09	1.77	4,264	1,351
	Bit. shale above cannel coal	No tendency to coke	6.2	10.3	1.46	5.65	.....	1,321	1,749
C. P. Gruver Farm, near McWilliam	Cannel coal (weathered)	Hard fairly porous coke	30.8	11.1	1.74	6.75	.....	3,448	1,416
Beaver County									
Keystone Drilling Co.'s mine, at Cannelton	Bit. coal, Upper Freeport	Slight tendency to coke	23.6	15.3	1.72	6.67	1.66	3,278	1,433
Wister Coal Corporation's Mine at Cannelton	Cannel coal, Upper Kittanning	Hard, fairly porous coke	53.6	12.9	2.76	10.71	1.27	4,089	.....
			54.7	11.5	1.29	5.00	1.55	2,573	1,276
			33.2	12.7	2.04	7.92	0.77	2,624	1,500
	Cannel shale above cannel coal	No tendency to coke	44.2	9.6	1.49	5.78	0.91	2,379	1,420
			15.6	10.6	1.09	4.24	0.45	1,591	1,651
	Bit. coal interbedded with cannel coal	Hard porous coke	38.2	15.5	2.35	9.12	1.87	4,802	1,257
			38.7	16.0	1.60	6.22	1.87	3,382	1,290
Beaver Cannel Coal Co.'s Mine at Cannelton	Bit. coal, Upper Kittanning	Hard porous coke	33.4	16.1	1.89	7.32	1.62	3,803	1,344
Blair County									
Altoona	Carb. shale (Burket), Upper Devonian	Very little change in appearance	None	11.6	1.56	6.05	0.20	369	1,864
Butler County									
Butts Cannel Coal Co. Annandale No. 1 Mine, Deegan P. O	Curly cannel coal (weathered), Upper Kittanning	No tendency to coke	31.9	25.8	3.22	12.49	.....	4,463	1,256
	Cannel shale above cannel coal (weathered)	No tendency to coke	31.1	13.1	1.68	6.52	1.09	2,934	1,419
Butts Cannel Coal Co., Annandale No. 2 Mine, Deegan P. O.	Lower bench, bit. coal, Brookville	Hard porous coke	30.0	17.1	1.13	4.57	1.21	3,063	1,342
	Upper Bench, bit. coal, Brookville	Hard porous coke	35.7	17.3	1.95	7.55	1.29	3,699	1,347
Center County									
Moshannon Coal Co.'s No. 11 Mine, South Philipsburg	Cannel coal B. bed	Slight tendency to coke	10.9	10.9	2.4	9.31	1.38	4,733	1,631
	Bit. coal under cannel coal	Very porous, fairly hard coke	12.9	10.3	2.28	8.85	1.42	5,439	1,586
Clearfield County									
Sterling No. 2 Mine near Houtzdale	Cannel coal, Upper Kittanning	Slight tendency to coke	5.3	7.1	1.20	4.64	1.39	3,001	1,642
	Bit. coal below cannel coal	Rather soft very porous coke	8.8	12.7	1.27	4.94	1.62	3,192	1,566
	Cannel shale	No tendency to coke	5.5	10.3	1.74	6.74	.....	2,025	.....
	Bit. shale above cannel shale	No tendency to coke	1.9	10.2	1.71	6.62	.....	1,114	1,831
Hartley No. 1 Mine, North of Graham Station near Philipsburg	Bit. coal D. bed	No tendency to coke	6.5	15.1	2.39	9.30	1.63	5,137	1,594
Woodland Cannel Coal Co.'s Cannel Crest Mine near Woodland	White-ash bed cannel coal	Very slight tendency to coke	12.9	7.4	2.93	11.38	1.37	4,309	1,658
Old Overly Farm, Woodland	Red-ash bed cannel coal (weathered). Probably Middle Kittanning	No tendency to coke	11.4	12.1	1.67	6.48	1.38	3,240	1,578
Fayette County									
New Geneva Fuel Co.'s mine, New Geneva	Bit. coal, Pittsburgh bed	Soft porous coke	26.8	14.3	2.41	9.36	1.58	5,299	1,403
Near New Geneva	Cannel shale Redstone from outcrop (weathered)	No tendency to coke	9.5	24.5	1.91	7.41	0.71	3,902	.....
	Bit. coal, Redstone (weathered) from outcrop	No tendency to coke	4.3	24.5	1.52	5.90	.....	3,582	1,371
	Bone in bit. coal from ourcrop (weathered)	No tendency to coke	12.7	17.6	2.09	8.11	.....	3,046	1,490
Greene County									
E. R. Gabler Farm near Greensboro	Cannel shale, Redstone	No tendency to coke	23.9	12.7	1.89	7.33	0.91	3,401	.....
S. I. Black Mine near Greensboro	Bit. coal Sewickley bed	Fairly hard porous coke	27.3	17.5	2.10	8.16	1.56	3,768	1,387
Israel Barclay Farm near Gray's Landing	Bit. coal Uniontown from outcrop(weathered)	Fairly hard porous coke	22.6	14.7	1.32	5.12	.....	2,529	1,375
	Bit. shale above coal from outcrop(weathered)	No tendency to coke	4.5	8.3	0.88	3.41	.....	562	1,773
	Bit. shale same horizon nearby	No tendency to coke	3.7	11.8	1.15	4.46	.....	645	1,788
On Purnam Run, Waynesburg	Bit. shale from weathered outcrop above Washington coal	No tendency to coke	3.6	19.6	1.33	5.16	.....	1,050	1,681
	Bit. shale from weathered outcrop below Washington coal	No tendency to coke	12.4	16.8	1.06	4.11	.....	944	1,702

Oil, Water, Ammonia, Gas and Residue Obtained Per Ton of 2,000 Lb. on Distilling Certain Coal and Shales

Locality	Description of Sample	Description of Residue	Oil, Gal.	Water, Gal.	Amm'a Lb.	$(NH_4)_2SO_4$, Lb.	Total N. %	Gas Cu.Ft. 0 Deg. C. 760 mm.	Residue in Lb.
Indiana County									
Bicknell Bros. Mine near Savan.	Cannel coal, Upper Kittanning	Hard dense coke	19.2	9.4	1.30	5.03	1.38	2,958	1,538
	Cannel coal above cannel coal	No tendency to coke	5.8	10.3	1.51	5.87	....	2,272	1,661
	Bit. coal below cannel coal	Very porous coke	13.6	11.3	1.57	6.08	1.57	3,777	1,491
Jefferson and Clearfield Coal & Iron Co.'s Mine No. 2, Ernest, Pa.	Bit. coal, Upper Freeport	Extremely porous coke	19.3	15.4	0.91	3.55	1.42	2,739	1,481
	Bone in bit. coal	Slight tendency to coke	8.4	10.0	1.63	6.32	0.79	2,177	1,648
Russell Coal Mining Co.'s Victor No. 29 Mine at Clymer	Bit. coal, Lower Kittanning	Hard porous coke	15.1	10.8	1.34	5.20	1.47	2,928	1,495
Near Barnard, Armstrong Co.	Bit. shale, Lower Conemaugh, weathered material from dump	No tendency to coke	6.4	11.8	1.64	6.36	0.57	2,933	1,537
Luzerne County									
Lehigh & Wilkes-Barre Coal Co.'s Stanton No. 7 Mine at Wilkes-Barre	Anthracite from Hillman bed	Practically no change in appearance	.....	5.7	1.44	5.59	0.98	2,458	1,883
	Canneloid anthracite in Hillman bed	Practically no change in appearance	.....	1.9	0.63	2.44	0.83	688	1,889
Lycoming County									
Ralston Coal Co.'s Mine at Ralston	Bit. coal, B. bed. Lower bench	Very slight tendency to coke	3.4	8.7	2.42	9.39	1.09	4,922	1,727
Sullivan County									
Northern Anthracite Coal Co.'s Mine at Lopez	Semi-anthracite coal, Bernice Bed	Practically no change in appearance	.....	9.9	2.24	8.68	1.18	3,288	1,865
Tioga County									
Bower Coal Co., at Blossburg	Bit. coal, Bloss bed	Dense hard coke	5.8	8.1	1.39	5.38	1.21	3,703	1,667
Jenkin Bros. Mine at Blossburg	Bit. coal Seymour bed	Slght tendency to coke	8.5	8.5	1.16	4.49	0.73	5,792	1,647
	Bony coal above main bench in above	Very slight tendency to coke	4.5	12.0	2.46	9.53	1.35	3,849	1,720
	Cannel coal	Very slight tendency to coke	7.1	7.1	2.16	8.39	0.73	4,778	1,676
Morris Run Coal Co.'s No. 15 Drift, Morris Run	Middle bench of cannel coal and bit. shale from cannel bed	No tendency to coke	2.9	12.2	2.37	9.17	0.73	2,493	1,768
	Cannel coal from middle bench cannel bed	No tendency to coke	3.0	10.1	1.77	6.86	6.86	2,214	1,759
Morris Run Coal Co.'s Mine at Morris Run	Bit. shale above Seymour bed	No tendency to coke	1.3	11.0	1.48	5.74	0.33	1,287	1,800
Washington County									
Ellsworth Collieries No. 2 Mine Ellsworth	Bit. coal, Pittsburgh bed	Hard porous coke	28.5	24.4	1.39	5.40	1.55	1,947	1,408
	Roof coal (bit. coal), Pittsburgh bed	Soft porous coke	28.5	16.9	1.44	5.59	1.33	2,074	1,381
	Coal washer refuse	Slight tendency to coke	4.3	5.9	0.70	2.70	0.60	1,778	1,686
Union Coal & Coke Co.'s Marianna Mine	Refuse from picking table	Slight tendency to coke	5.3	14.1	1.15	4.46	0.45	1,230	1,705
	Coal washer refuse	Slight tendency to coke	12.7	15.2	1.67	6.48	0.82	2,709	1,631
Vesta No. 4 Mine, Jones & Laughlin Steel Co., California, Pa.	Roof coal (bit. coal), Pittsburgh bed	Hard porous coke	25.0	25.0	2.68	10.41	1.48	4,320	1,391
Jones & Laughlin Steel Co.'s coal washer	Coal-washer refuse	Slight tendency to coke	3.2	12.8	1.63	6.32	0.44	1,816	1,664
Jones & Laughlin Steel Co.	Coal-washer refuse	Slight tendency to coke	3.0	12.5	1.20	4.66	0.32	1,157	1,731
American Zinc & Chemical Co.'s Mine, Langeloth, Pa.	Bit. coal, Pittsburgh bed	Hard porous coke	26.5	17.7	1.99	7.73	1.41	3,737	1,363
Westmoreland County									
Jamison Coal & Coke Co.'s No. 6 Mine near Greensburg	Bit. coal, Pittsburgh bed	Soft porous coke	25.8	23.8	2.39	9.26	1.60	4,078	1,450
	Roof coal and shale Pittsburgh bed	Tendency to coke	12.8	10.9	1.86	7.21	0.77	2,140	1,664

Results Obtained in Large Vertical Retort

Beaver County, Pennsylvania									
Wister Coal Corporations Mine at Cannelton	Cannel coal	Hard fairly dense, dark grey coke with sub-metallic lustre	46.0	11.7	4.01	15.56	1.27	5,306	1,278
			44.5	13.0	5.84	22.66	1.55	5,719	1,280
	Cannel shale above cannel coal	Very slight change in appearance	31.7	12.6	4.15	16.10	0.77	3,302	1,477
			14.6	10.6	1.08	4.19	0.45	2,248	1,615

Determining Ash Content in Coal for Given Fixed-Carbon Percentage in Coke

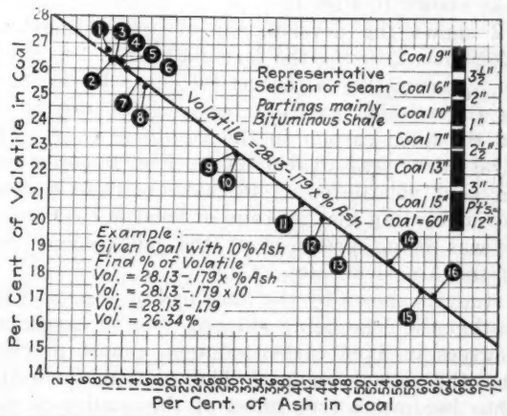
By E. S. Ward
Sabinas, Coahuila, Mexico

AT CLOETE, Coahuila, Mexico, the coal bed belongs to the upper Cretaceous series. It is situated in what is known as the Sabinas coal basin. The mines are on a branch of the Mexican International R.R. about six miles west of Sabinas Station and seventy-two miles south of the United States border.

In Fig. 1 may be found a composite section of the bed made from a series of measurements taken throughout the mines. Five consistent partings were encountered made up generally of a high-ash dark bituminous shale. The coal between the partings contained about 11 per cent of sinks in a solution having a specific gravity of 1.4. The partings made up more than 21 per cent of the bed by weight.

The entire bed carried about 26 per cent of ash, according to the studies made from the composite section. An earlier report made by Roberts & Schaefer from the quartering down of twenty mine cars containing run of mine gave a total ash content of approximately 30 per cent, but the workings at the time of the Roberts & Schaefer report were considerably thinner than at present.

In reporting upon the preparation of this coal for coking it was noticed from the analyses that the vola-



ASSAYER	ASSAY No.	ASSAY VOLATILE	ASSAY FIXED CARBON	ASSAY ASH	CHARACTER OF COAL ASSAYED
Local Assay	1	26.74	64.26	9.00	1.35 S.G. Floats Seam with Partings Removed
" "	2	26.33	64.10	9.57	1.40 S.G. " "
" "	3	26.28	63.57	10.15	1.45 S.G. " "
" "	4	26.22	62.96	10.82	1.50 S.G. " "
Roberts & Schaefer	5	26.25	62.57	11.18	1.40 S.G. " Seam Including Partings
" "	6	26.05	62.15	11.80	1.45 S.G. " "
Local Assay	7	25.54	60.46	14.00	Seam with Partings Removed
Pittsburgh Testing Lab.	8	25.26	59.72	15.02	" "
Roberts & Schaefer	9	22.77	47.41	29.82	Seam Including Partings
" "	10	22.68	47.40	29.92	1.50 S.G. Floats of Sinks at 1.40 S.G.
Local Assay	11	20.76	38.85	40.39	1.35 S.G. Sinks Seam with Partings Removed
" "	12	20.22	36.10	43.68	1.40 S.G. " "
" "	13	19.52	32.48	48.00	1.45 S.G. " "
" "	14	18.58	26.80	54.62	1.50 S.G. " "
Roberts & Schaefer	15	17.45	22.87	59.68	1.45 S.G. " Seam Including Partings
" "	16	17.27	21.07	61.66	1.50 S.G. " "

FIG. 1. SECTION OF SEAM AND GRAPH CORRELATING ASH AND VOLATILE MATTER

New Coking Formulae and Relation existing between Ash and Coal charged to Ovens and fixed Carbon in Coke Produced

y = Per Cent Yield of Coke
A = " " " Ash in Coal
V = " " " Volatile in Coal
A_c = " " " Ash in Coke
V_c = " " " Volatile in Coke
F_c = " " " Fixed Carbon in Coke

$$A_c = \frac{A(100-V_c)}{100-V}; \text{(Equation 2)}$$

Substituting for V its Value as determined on Fig. 1

$$V = 28.13 - .179A$$

$$A_c = \frac{A(100-V_c)}{71.87+.179A}; \text{(Equation 3)}$$

$$F_c = 100\% - A_c - V_c; \text{(Equation 4)}$$

$$y = 100 - V + V_c\frac{y}{100}$$

$$y - \frac{V_c y}{100} = 100 - V$$

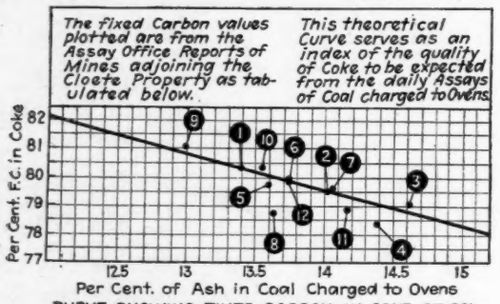
$$y(100-V_c) = (100-V)100$$

$$y = \frac{(100-V)100}{100-V_c}; \text{(Equation 1)}$$

$$A_c = \frac{100A}{y}$$

$$A_c = \frac{100A}{\frac{(100-V)100}{100-V_c}}$$

$$A_c = \frac{A(100-V_c)}{100-V}; \text{(Equation 2)}$$


The fixed Carbon values plotted are from the Assay Office Reports of Mines adjoining the Cloete Property as tabulated below.
This theoretical Curve serves as an index of the quality of Coke to be expected from the daily Assays of Coal charged to Ovens.
Per Cent. F.C. in Coke
82
81
80
79
78
77
12.5
13
13.5
14
14.5
15
Per Cent. of Ash in Coal Charged to Ovens

CURVE SHOWING FIXED CARBON IN COKE OF 2% VOLATILE FROM EQUATIONS 3 AND 4

Fixed Carbon in Coke Shipped Free of Breeze and Ashes and Ash in Washed Coal Charged to Bee-Hive Ovens.—Cia. Combustibles "Agujita" S.A. Agujita, Coah; Mexico.

Assay No.	1919	Ash in Coal	F.C. in Coke
1	July	13.40	80.37
2	Aug.	14.03	79.53
3	Sept.	14.62	79.09
4	Oct.	14.38	78.35
5	Nov.	13.60	79.77
6	Dec.	13.74	78.97

Assay No.	1920	Ash in Coal	F.C. in Coke
7	Jan.	14.06	79.67
8	Feb.	13.63	78.73
9	Mar.	12.98	81.12
10	Apr.	13.55	80.38
11	May	14.16	78.92
12	June	13.74	79.93

Average Assay of Coke (Omitting No. 8)	
F. C.	79.74
Vol.	2.01
Ash	18.25

Calculated Assay of Coke By Equations 3 and 4	
F. C.	79.75
Vol.	2.01
Ash	18.24

FIG. 2. EQUATIONS FOR DEDUCING ALLOWABLE ASH PERCENTAGE WITH GRAPH CORRELATING ASH IN COAL WITH FIXED CARBON IN COKE

tile content decreased uniformly as the ash content increased. This relationship between ash and volatile was plotted and a formula expressing the relation was evolved as shown in Fig. 1.

Fig. 2 shows the development of special algebraic coking formulæ, utilizing the formula of Fig. 1 to obtain equation 3, permitting a theoretical curve to be drawn showing the relation existing between the ash in the coal and the fixed carbon in the resulting coke. This theoretical curve was drawn as on Fig. 2 for a coke of 2 per cent volatile so as to make possible a study of a coke containing that average of volatile constituent, such as was being produced at the neighboring coke plant of the American Metal Co.

This study is shown by the plottings of Fig. 2, which indicate that the coke being shipped, free of breeze and ashes, agrees in fixed carbon content almost precisely with the theoretical values. The plotted theoretical curve thus becomes a true index of the quality of commercial coke to be expected from a coal carrying a known percentage of ash.

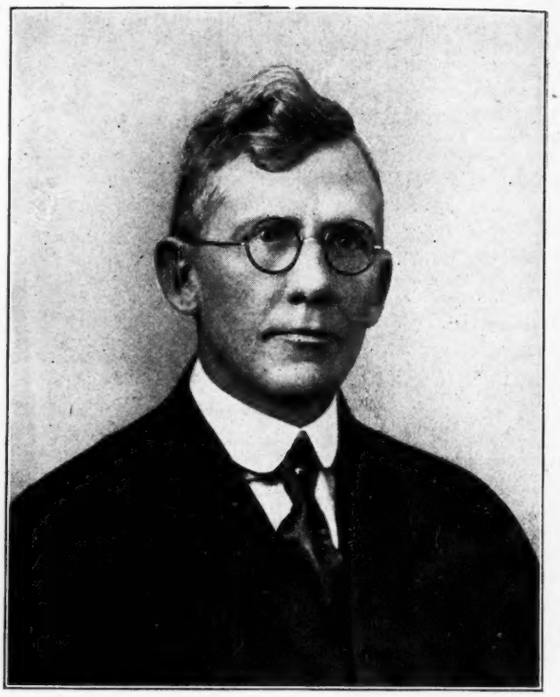
The curve shows that it will be necessary to reduce the ash content in the Cloete run-of-mine coal to about 13.5 per cent in order to insure obtaining an 80 per cent fixed carbon coke, which is the contract base for the district. The algebraic coking equations can be applied to any coal and probably will be especially useful when the relation between the volatile and ash in the raw material can be determined.

I am indebted to M. R. Tennant, formerly washery superintendent at the Agujita plant of the American Metal Co., for the idea of evolving these algebraic coking formulæ.

G. S. Brackett Is New Vice-President of No. W. Va. Operators Association

GEORGE S. BRACKETT, of Fairmont, is the new executive vice-president of the Northern West Virginia Operators Association, succeeding George T. Bell. He is widely known in northern West Virginia, having been active with C. D. Robinson and his associates and with the association.

Mr. Brackett as one of the first acts of his administration has divided the twelve and a half counties in northern West Virginia into divisions for which he has completed arrangements to procure daily reports of loadings and distribution.



GEORGE S. BRACKETT

Mr. Brackett was graduated from Columbia University in 1897 and for nine years was in independent engineering practice covering bituminous coal mines and equipment in western Maryland, central Pennsylvania, Upper Potomac, Preston County, the Fairmont region and eastern Virginia. Following this for five years he had charge of one of the largest coal-producing mines in the Fairmont region. For nine years he was general superintendent and general manager of the Pittsvein Coal Co. until its purchase by the Robinson interests in the fall of 1920.

Would Form a West Virginia Miner's Union

DESIRING to free themselves of their relations with the mine workers of Indiana, Illinois and Ohio, certain employees in the coal mines of West Virginia, led by Albert T. Manka, president of the Polish Society in West Virginia, are discussing the formation of a new and separate organization. Manka was formerly an international organizer for the United Mine Workers of America. C. F. Keeney and Fred Mooney, president and secretary respectively of District 17, United Mine Workers, deny that any separatist sentiment exists in West Virginia and declare that Manka is a bona fide member of the present union.

SENATOR PHIPPS, OF COLORADO, has presented to the Senate petitions against the Calder coal regulation bill from the following Colorado interests: Denver Civic and Commercial Association; William E. Russell Coal Co., and Canon Reliance Coal Co., Denver; Pueblo Retail Coal Dealers Bureau; Govereau Coal Co., Rocky Ford; Colorado Retail Coal Dealers Association, Denver, and F. R. Wood, Trinidad.

Mining Engineers Hold Their Annual New York Session

Coal Men Declare Alaska Coal Fields Greatly Overrated—Allen Lays at Rest Doubts as to Whether Skip Hoisting Can Be Conducted Without Undue Degradation—Reger Shows That High-Volatile Coal Occurs in General in Oil Zones

ABOUT eight hundred persons attended the New York sessions of the American Institute of Mining and Metallurgical Engineers held Feb. 14 to 17 in the Engineering Societies Building, New York City. The first day was devoted to metal mining, non-ferrous metallurgy and non-metallic minerals, the only papers of interest to mining engineers being one by H. W. Seamon in the mining and milling section on the "Relation of Air Pressure to Drilling Speed of Hammer Drills."

In view of the growing use of these drills in roof, floor and coal the subject is of increasing interest. It is the outcome of no less than 1,500 tests made by the United Verde Copper Co. Factors of desirability were obtained by adding together the costs of drilling, of power and of maintenance per foot of hole to obtain the real cost of operating the drill, and taking the reciprocal of the figure thus obtained as the factor desired.

Experience shows that there is little or no increase in mechanical efficiency of the drills above 90 lb. of pressure, that the distance drilled per air indicated horsepower is greatest for the jackhamer type at 90 lb., and increases at a slow rate for other machines at the higher pressures, that the average thermal efficiency is greatest at about 95 lb., that the factor of desirability, while increasing with the pressure, shows a comparatively slow rate of increase for pressures above 100 lb.

The author adds that as the average drill is made to be used at a pressure of 80 lb. or less, the user of pressures much exceeding this will invalidate the present replacement agreements with the manufacturers, thereby increasing the upkeep cost, that increased breakage at the higher pressures with consequent greater loss of time of the drill runner in changing or repairing the machine would tend to reduce the factor of desirability and that the increased breakage of drill steel would tend to limit the pressure that could be economically used, although sufficient data have not been obtained whereby the maximum can be determined. For the United Verde works 95 lb. at the drill appeared to the author of the paper to be the most economical pressure.

Time Upsets Simple Systems of Depletion

John W. Roberts, a certified public accountant of Clarksburg, W. Va., presented a paper on "The Time Factor in Depletion of Mines." He showed that where a body of 1,000,000 tons of mineral was bought for $100,000 (which is the physical equivalent of a cost of 10c. a ton), with the prospect that it would be exhausted in a term of fifty years, the value would appear at first sight to be 10c., but what was to be mined in the first part of the first year would be worth 31.72c. and what was mined in the fiftieth year would have a present value of 1.725c. per ton.

These are the relative values when the rate of interest is figured at 6 per cent. Figured at 8 per cent the mineral now mined and that to be extracted in the fiftieth year would be worth 40.87c. and 0.871c. per ton respectively. There can be little comparison in value between the mineral extracted in 1921 and that which we can hope to mine only in 1971.

Mr. Roberts contended that the depletion of value should be calculated with these facts in view, that it was not just to deduct 10c. per ton in the instance cited but rather 31c. or 41c., and this wholly apart from the consideration that greater depth, greater distance or great difficulty might make the mining of the more distant mineral unduly expensive unless a development of mining methods offset this consideration.

Mr. Roberts declared that should a man purchase a load of hides of many grades and select the poor hides and sell them at the average figures, reserving the better hides for later sale, meantime valuing the better hides at the average value, the Treasury Department would declare that he had made an erroneous return and compel him to put a higher valuation on the select hides.

So the mineral mined today has a greater value than the mineral which it is necessary to reserve for future extraction. The first is being mined now and in a depletion estimate should be evaluated at the higher figure.

In the evening of the Monday session a smoker was held in the auditorium with E. P. Mathewson as master of ceremonies. The members and guests were entertained entirely by professional talent and not, as is usual, by stunts prepared by the members of the institute. The affair, therefore, had no mining color, and it did not afford an opportunity for friends to greet one another, taking place as it did in a room with serried immovable seats. Magic and music, comic boxing and a "movie" of the Dempsey-Brennan fight were the principal numbers. From all sides came expressions of regret that the affair was not more dignified and more befitting an assembly of engineers.

Edwin Ludlow Is Chosen New President

Early Tuesday morning the annual meeting of the institute was held. Herbert Hoover made a brief report of the activities during the past year. Bradley Stoughton, as secretary, also made his report as did also the membership, library and auditing committees. The tellers announced that the slate of officers for 1921 was elected without exception. The official heads for the present year will therefore be: President, Edwin Ludlow; Vice-Presidents, E. L. Degoyler and Albert Burch. Serving with these three as directors will be R. V. Norris, W. G. Mather, George Otis Smith, W. E. Wrather and J. C. Greenway. Announcement was made that Walter Lewisohn had offered a $1,000 prize for the best paper by a member of the institute on the uses of platinum.

Following the business meeting the principal technical session was addressed by George S. Rice and ex-president H. V. Winchell. Mr. Rice's talk was on "The Rehabilitation of Devastated French Coal Mines." In summarizing France's condition Mr. Rice said that of sixty million tons yearly consumed in that republic before the war forty million tons were produced in France, and the rest was imported. Of the forty millions, twenty-eight millions were produced in northern France, twenty millions of this production were destroyed by German and allied gunfire and military operations and by the wanton destruction perpetrated by the Germans when shortly before the armistice they decided to evacuate the coal region.

French Collieries Use Vacuum Dust Hoods

Mr. Rice showed with what scrupulosity all the dust made in the screen house is gathered by vacuum hoods. This is done largely to prevent the fine dust from being drawn into the shaft, from which the screen house is further separated by a large interval. The photograph he exhibited showed an almost entire absence of dust throughout the building. He also noted the fact that French mines had adopted the practice of storing coal at the plant. He showed several cross-sections of the French fields, explaining that the measures had been so violently distorted that they were encountered in the reverse order from that in which they would have been found had they been noted before the folding took place.

Mr. Rice laid much stress on the development of cementation in France. The French art of cementing against water is far in advance of anything of the kind in this country. Here the work is limited to the plugging of water-bearing fissures during shaft sinking. In France the site of the shaft is rendered impervious to water by the passing of

cement under intense pressure down boreholes from the surface. Where the rock resists penetration by the cement, chemical lubricants are used, by which this difficulty is overcome. The Germans found unusual difficulties in breaking through the water seals in those shafts which had been sunk by the cementation process.

It is not necessary to discuss Mr. Winchell's paper on "the Geology of Pachuca and El Oro." It was too closely detailed to be of real value to an audience not specially interested in the deposits described. Moreover, it seriously needed illustration by drawings to make matters plain. The conclusions he presented were, however, well worth while, and the address was delivered with all Mr. Winchell's notable powers of expression. It is unfortunate that a paper of this type is given unlimited time at a general session, whereas a number of articles of immensely broader appeal, even in a special session, are drastically cut short by the ten-minute rule.

Alaska Coal Beds Vastly Overrated

One of the afternoon sessions was devoted to coal. It opened with an address written by George Watkin Evans. This was not read at length but briefed by Dr. E. A. Holbrook. Mr. Evans disclosed in his paper that the wonderful deposits of Alaska are greatly overrated. The better coals cannot be depended upon and are not likely to make anyone unduly rich.

Philip N. Moore said that he visited the mines of the Alaska Engineering Commission in the Matanuska field and he noted that every little while a volcanic dike would cut through or appear to cut through the seam, and when the tunnel would be driven through the dike there might be on the other side no coal or another seam altogether. Thirty or forty men were getting out in aggregate about 125 tons a week. It is true that many of these men were engaged in prospecting and not in coal production. One seam was said to measure 12 ft. in thickness; really it was only 4 ft. thick. It had been folded on itself twice and so measured three times 4 ft. Mr. Moore said that the Matanuska field was a shining example of what could be done by the "propaganda of faddists."

H. H. Stoek called attention to the fact that Mr. Morris had reported to much the same effect in *Mines and Minerals* some fifteen years ago. George S. Rice said that the Chickaloon field had been opened first, as at this point the coal was found to be of high rank, but it was so troubled that it was decided to open at Eska Creek, where the coal was more regular but where accordingly there had been less metamorphism and the coal was consequently of lower rank. About 4,000 tons was mined a month, and a pile of 30,000 or 40,000 tons of coal was accumulated. The Eska coal had 20 to 25 per cent of ash and was a high-volatile fuel, but it was thought better to mine it and to leave in the ground the higher-grade Chickaloon coal with the multiplicity of difficulties involved in its extraction.

That Forty-Foot Seam Had a Short Career

The mine on the celebrated Cunningham claim, so prominent in the Ballinger controversy, located in the Bering field, stood in 40 ft. of coal. After the mine had been driven in 300 ft. the coal was lost and was never found again. It was not equal to the New River or Pocahontas coals. From Chickaloon 1,000 tons was at much trouble and expense brought out on a sled and used by the navy. It was better than the average run of navy coal because it was hand-picked. In Mr. Rice's belief the Chickaloon coal should be developed for navy use. We need a supply of high-grade coal on the Pacific in case of war, but no private concern could afford to undertake the risk, and the development of the coal cannot be taken up as a separate venture.

A member then declared that he had visited every field in Alaska and found they all fell in one of three categories: Coal abundant but no good; good coal so badly faulted it can't be mined; and good coal so located that it can't be shipped. He regarded Alaska as being not as far advanced as twenty years ago.

The paper by L. D. Tracy, of Pittsburgh, on "The Mine-Water Neutralizing Plant at Calumet Mine" was then presented. It has been already printed in *Coal Age*. A member in the discussion of the paper said that the water had not been so far neutralized that it could be fed to the boilers as a steady diet. It had been used for washing purposes and had served for use in the boilers when other water was lacking.

Water Hoists Are Being Replaced by Pumps

Howard N. Eavenson then delivered his paper on "Run-off and Mine Drainage," which was followed by a written comment contributed by J. R. Campbell, who said that from four to seven tons of water entered the mine for every ton of coal mined. Another member put the mine water in the Punxsutawney district at eleven tons for every ton mined. J. D. Warriner said that the Lehigh Coal & Navigation Co. was abandoning water hoists and replacing them by pumps. Most of the water came in from the outcrops, and in steeply pitching beds the amount of water to be handled depended not so much on the acreage mined as upon the condition of the outcrops and the readiness with which water was directed to these means of access to the workings.

R. V. Norris, who was in the chair, said that in the shallower and more level mines of the anthracite region water most abounded under the small streams where the operators ventured to withdraw the supporting pillars. It was always drier under the rivers, for there the removing of pillars could not be so much as considered.

In reply to a question of J. R. Campbell, forming part of his written comment, Mr. Eavenson said that in the effluent of the Gary mines there were three grains of acid per thousand gallons with normal run-off. At times of freshets there was no acidity. It was said that the mine waters became increasingly acidulous with the advance of time.

Mr. Strange declared that it was possible by flushing sand into breaches to reduce the quantity of water entering the mine.

Does Skip Hoisting Break the Coal?

Andrews Allen then presented the paper written by himself and John A. Garcia on "Skip Hoisting for Coal Mines." He could offer no unquestionable proof that coal was not broken in hoisting by skips, but the evidence is strongly favorable to that belief. At a mine using a cage hoist 9.3 per cent of the product was 6-in. lump. At one using a 10-ton skip 10.5 per cent was of this large size for the period between Jan. 1 and Oct. 30. In fact in October it rose to 12.7 per cent.

The results as regards 2-in. material show also the superiority of the material hoisted in skips. Until we have details of the size of the coal produced with cage and skip hoists from the same mine using the same screens and making identical product and at a silimar period of development, full conviction as to the superiority of the skip system will not be felt. However, it must be remembered that the 10-ton skip mine for which the paper gives the results obtained is Kathleen, which mine, being new, must be doing much development work, and yet its showing is the better of the two.

George S. Rice said that in 1893 he had inspected a plant erected by Richard Ramsey which had a skip hoist. Later one was erected in Alabama for the Tennessee Coal, Iron & R.R. Co. In Europe, where there are various kinds of coal, as many as eight or nine in some fields in the different seams mined, it would seem impossible to introduce skip hoisting. T. M. Chance later in the meeting showed methods of installing chutes which would permit of the loading of coal at the different landings.

Cage Hoist Spills Coal to Landing and Sump

Howard N. Eavenson said he had investigated the hoists in Illinois and found that where a big tonnage was being raised by a cage hoist the mine force was kept under continuous tension in its effort to maintain the steady output of coal. There were thirteen men at the bottom on the day of his visit. At a skip hoist the men seemed to be handling the coal in a dilatory manner, their efforts being so much more fruitful of result. He was of the opinion that there was 2 per cent less small-size coal with skip hoisting than there was when hoisting was done in cars.

At the cage hoist eight tons per day were dropped on the ground landing and twenty or thirty tons in the same period

of time went down the shaft and landed at the bottom; so much, in fact, that arrangements were made so that a car could be lowered into the bottom for the loading out of the fallen coal. E. A. Holbrook said that the Dominion Coal Co. in 1902 decided to lower its shaft to a depth of 960 ft. and it installed two 9- or 10-ton skips, which were able to handle 4,000 tons a day.

The symposium on pillar drawing was somewhat shortened because most of the papers prepared were held up for the Wilkes-Barre meeting. The two presented were "Coal Pillar Drawing Methods in Europe," by George S. Rice, and "Pillar Drawing in Thick Coal Seams," by George B. Pryde and R. A. Magraw. Neither of these papers was discussed. The report and suggestions of the committee on "A Standard System of Accounting and Analysis of Cost of Production" by the National Coal Association also was passed by, being neither briefed nor made the subject of discussion. It was unfortunate that neither Mr. Pryde nor Mr. Magraw had made provision for an alternate to make a brief presentation of the contents of their paper, which consequently was only read by title.

In the evening an entertainment was held in the auditorium for both ladies and gentlemen. The amusement was furnished by two excellent entertainers. This program was followed by dancing.

On Wednesday morning welfare films of the United States Steel Corporation were shown; the Petroleum and Gas Section held a meeting, the annual reports of the Industrial Relations Section's subcommittees, T. T. Reed presiding, were presented and a session was held on "The Breakage and Heat Treatment of Drill Steel," at which Benjamin F. Tillson presided.

Look for Oil Where Fat Coal Is Found

At the Petroleum and Gas session the only paper of direct interest to coal men was that by David B. Reger, State Geologist of West Virginia, entitled "Carbon Ratios of Coals in the West Virginia Oil Fields." Mr. Reger noted, as has David White, of the U. S. Geological Survey, and George H. Ashley, State Geologist of Pennsylvania, that in coal fields oil occurs only where the coal contains a large quantity of volatile matter. It is believed that the same causes which have devolatilized the coal and oil shales have also removed oil such as is now found in pools.

With Mr. Reger's contribution was a map of West Virginia showing lines which are termed iso-carbs. They show in this instance the amount of carbon in the "pure coal" of the lowest measures in the region through which they pass. On this map are delineated the oil fields of the state. It is easy to see at a glance that where the percentage of carbon is high, oil is invariably absent, or at least has not been discovered. Where the percentage of carbon is low, oil is apt to be found if other conditions favor its segregation into pools.

Valuable Discussion Regarding Drill Steel

No discussion seemed more animated than that regarding the breakage and heat treatment of drill steel, for which two sessions were held. The questions were taken up under the following heads: (1) Study of drill steels which give the greatest service before breakage; (2) maximum service that may be expected; (3) mechanics of failure; (4) development of machines for accelerated tests of drills; (5) correlation of field tests with accelerated tests in the laboratory and (6) reclamation of depreciated drill steels.

Charles M. Brown, vice-president of the Colonial Steel Co., said that cruciform steels were being displaced, some companies substituting the quarter octagon section. The cruciform shapes have comparatively little steel in the striking bit and, moreover, are much injured in the process of forging.

Van H. Manning, research director of the American Petroleum Institute, offered a resolution calling on the directors of the institute to engage with several other organizations named in a research into drill steel. The resolution was unanimously adopted. In the afternoon moving pictures on the mining of asbestos and of sulphur and on the making of steel were shown by the U. S. Bureau of Mines.

Another session was held by the Industrial Relations Section, at which Dr. A. J. Lanza, formerly of the U. S. Bureau of Mines and now medical director of the Hydraulic Steel Co., read the first paper. In his address Dr. Lanza urged the industrial physician at mines to go underground and become acquainted with the conditions under which the mine workers labored, so as to know the class of medical hazards to which they are subjected. Otherwise he will be debarred from adequately taking part in preventive medical work. The importance of this is seen in the fact that about four times as much time is lost from illness as from accidents. The industrial physician should work hand in hand with the superintendent, manager, foreman, employment director, safety man and other mine officials.

Dr. Lanza said "It is not the purpose of the physical examination to bar the abnormal man from work. It would be absurd for industry to take the stand that only those can work who are able to pass a fairly rigid physical examination. Neither industry nor society in general could begin to deal with the economic problems involved were such a state of affairs to become existent. But it is fair to assume that no man has a right to work at a specific occupation where, as a result of his physical condition, he might be a source of danger to himself, his employers or his fellow employees.

Certain classes of employees, such as hoisting engineers, cage tenders, rescue men, fire crews, shotfirers and men working on underground haulage systems, should be examined not only when hired but at stated periods also. For many purposes a skilled and rapid inspection will suffice. To be successful in its operation, the establishment of such an inspection presupposes that the mine doctor has an accurate knowledge of the nature and requirements of the jobs in the mine."

Dr. Lanza declared that "miners' nystagmus and the affections known as 'beat hand,' 'beat knee,' etc., which figure in English mining literature are apparently unknown in our mines. The most widely spread specific disease is miners' phthisis, or miners' consumption, which is limited to hard-rock metal mines."

Hospitalitis and Its Successful Cure

In discussing this paper Robert Linton, the chairman, said that on leaving the hospital men were apt to have what was often called "hospitalitis," which caused them to shirk work. Lately a more kindly attitude has been taken toward such men than at first. They are now believed not to be lazy but weak and lacking in confidence. In consequence men just released from the hospital are given light work until strength and confidence are restored. They seem more anxious to do work that lies within their powers, and with the progress of time will undertake with efficiency work such as they were in the habit of performing.

Parke Channing remarked that at the Miami Inspection Hospital, rehabilitation apparatus had been installed, and as a result men had been returned to work six weeks earlier than had been possible before they were given the treatment which the apparatus made possible. The chief surgeon said he used to think that 60 per cent of the men discharged from the hospital were malingerers. He now believes that 90 per cent of the men want to return to work and they exhibit that disposition by following up the reconstruction work religiously.

Alabama Coal Strike Officially Ended

As THE result of an order of the United Mine Workers of America the Alabama coal strike came to an end Feb. 22 after six months of disorder. For a long time the mine workers had been losing ground and the waning demand for coal gradually destroyed all hope of a victory.

Alabama national guardsmen were withdrawn by order of Governor Kilby, in whose hands the entire question had been placed for determination. His decision will be final.

On Feb. 19 the railroad bridge over the Warrior River in Jefferson County, near Deltona, which furnished access to the mines of C. O. Rogers, was dynamited, isolating the coal properties. The mine had been operated on the "open-shop" plan, and threats had been received as to what would be done if the company continued to work under those conditions.

Problems of Operating Men

Edited by James T. Beard

Should Mine Foremen Serve on Examining Boards?

A Properly Constituted Mine Examining Board Should Be Representative of the Three Classes Concerned; Namely, the State Inspection Department, Mine Owners and Operators, and the Mine Workers Employed in the Mines, Which Was the Evident Intention in the Framing of the Mine Law

WHEN I went before the examining board to take the examination for mine foremanship, the board consisted of the district mine inspector, a mine superintendent and a practical miner. It seemed to me that this was a fair representation and one that gave promise of the just treatment of any miner who would come before the board. Personally, I would rather take the examination before a board of this kind than to run a possible chance of prejudice on the part of some mine foremen sitting on the board.

As is well known, there are a large number of mine foremen who have come into personal contact with the miners who present themselves for examination. In some cases, a foreman will be prejudiced by reason of his previous acquaintance with an applicant and, in that case, it will be difficult for him to render a just opinion regarding the qualifications and fitness of the man to fill the same position that he himself holds.

Effect of Prejudice of Foremen

Indeed, the prejudice of a foreman sitting on an examining board may be either for or against an applicant. But, in either case, the result is alike harmful. While a mine superintendent or operator may have more or less knowledge of the men coming before the board, he has not had as close association with these men as the mine foreman and is better able to give a fair judgment, holding as he does a higher position than the one for which the applicant is striving.

As at present constituted, a mine examining board represents the three classes chiefly concerned. The district mine inspector represents the state and safeguards its interest in the work of mining. The superintendent represents the owner or operator of the mine; and the practical miner sitting on the board looks after the interest of the workers employed underground.

In the past few years I have observed with pleasure the kind of certified men our examining boards have been producing. The results show that the standard of competency has been gradually raised to keep pace with the advancement in coal mining. This is gratifying, as we know that many mine foremen neglect to keep abreast of the times. Too often, they are prone to keep to the old familiar methods of operating and reluctant to change in favor of a new system.

One can readily understand that dissatisfaction with an examining board will frequently result from a man's failure to pass the examination. Sometime since, a friend of mine who did not succeed in passing the board, explained that someone on the board had a grudge against him. The following year he went before the same board and was successful. He then stated that his failure to pass the examination the previous year was his own fault, as he had not secured the proper endorsement certifying to his experience as a miner.

In closing, allow me to say that what we need most of all in examining boards is the fair, intelligent and practical treatment of every applicant. Prejudice for or against an applicant should never be allowed to affect the judgment of any member of the board. To my mind, an operator or a superintendent occupies a position where he is generally better able to judge of the qualifications of applicants than would be the average mine foreman.

Johnstown, Pa. OPERATOR.

Assistant Foremen and Firebosses

The safety of mine workers is more largely dependent on the active cooperation needed between assistant foremen and firebosses than is generally suspected, notwithstanding the fact that the mine foreman is the one who is ultimately responsible for the safety of the mine and the men employed therein.

FREQUENT references have been made recently, in *Coal Age*, regarding the relative responsibilities of the mine foreman, assistant foreman and fireboss, for the safety of the mine and the men employed underground. In this respect, while we must not forget the responsibility that rests on the shoulders of the mine foreman, most of us will agree that much depends on the kind of co-operation that exists between the assistant foreman and the fireboss.

Speaking of safety in the mine, my thought is that both the assistant foreman and the fireboss come into closer contact with the miners than the most active and industrious foreman. For this reason, it is my belief that they should be held more strictly to account for safe conditions in the workings and throughout the mine than the foreman himself.

In order to secure the greatest measure of safety, there must be real co-operation between these two under-officials. When one of them observes a danger he must not fail to report it to the other and confer with him in regard to taking all needed precautions to avoid an accident.

Real Co-operation Requires More Than Is Stated in the Law

For instance, let us say that a fireboss, on discovering a danger when making his morning round, fences off the place with the proper danger board, reports the same to the mine foreman and makes the proper entry in the book kept for that purpose. We must admit that he has done all that the law requires of him in such a matter.

However, if there is real co-operation between that fireboss and the assistant foreman, the former will not fail to talk with the latter and advise him in regard to every little detail that will acquaint the assistant more thoroughly with the conditions found and make him better able to deal intelligently with the situation. In that way, many an accident will be avoided and there will be no excuse for misunderstanding which is so often claimed.

Every assistant foreman should be broadminded enough to receive and act upon the suggestions of a fireboss who has discovered some danger that he knows the assistant will meet and regarding which he should be informed. In other words, these two officials should work hand in hand for the protection of the men in their charge.

Occasionally, one sees a disposition on the part of an official to treat the miner with less consideration than is his due. It is false pride on the part of an official who is entrusted with the duty of protecting his miners, to consider himself as though he was a superior being. If an official has such a disposition, let him forget it and begin at once to treat the miner as a "pal."

Far better results will be obtained

and greater safety secured by conferring frankly with a miner regarding a possible danger that may exist in his place. Talk with him about it and bring him to appreciate the fact that he must watch himself closely and use every precaution for his own safety. My experience is that talking frankly with a miner makes him more careful in the future.

It is true there are miners who are indifferent, and it is necessary in that case to emphasize an argument more forcibly. This fact shows, however, the need of understanding your men, knowing their whims and habits, and treating them accordingly. Let me suggest, here, the need of all mine foremen encouraging greater co-operation between their assistants and firebosses, along the lines I have mentioned. OBSERVER.

Johnstown, Pa.

Observations and Conclusions of a Brother Fireboss

Conditions may exist when it would be dangerous to leave a large abandoned section of a mine open. Because of the continued generation of gas within, safety may require it to be sealed. The breathing of a sealed section is affected by changes in barometric pressure.

IT has been with great interest that I have read the discussion relating to the observed change of breathing of a sealed portion of a mine at Bruceville, Ind., as more fully explained in *Coal Age*, Jan. 27, p. 186. The suggestion appended by the editor as to the possible causes of the observed change in the breathing of the section, is to my mind quite feasible.

Inasmuch as I was employed as fireboss in that particular section to which this discussion relates, and was well acquainted with the conditions that prevailed in the sealed area previous to the erection of the seals, and had every opportunity to observe the behavior of the gas after the seals were built, I may be permitted to offer a few suggestions resulting from my observations.

Roof Conditions Very Bad

As my brother fireboss has stated, the conditions that prevailed in that section were very bad. Shortly after the section was opened every precaution was taken to avoid trouble. For a distance, both the entries and the rooms ran level, and the roof was fairly good in the first seven rooms, driven off each entry. These rooms showed no signs of caving for some time after they had been driven their full distance.

But conditions changed when No. 10 room was turned. The coal was lower and the entries started to rise, while the roof became very bad. Both the entries and the new rooms caved up to the "steel band," and this caving soon spread over most of the panel. I would say the roof slate beneath the steel band would hardly average more than three feet in thickness.

The fact that the steel band would not break soon made it evident that trouble was in prospect. A creep developed and an enormous pressure was thrown on the room and entry pillars. The weight even crossed the barrier pillar and threatened the main haulage road. The entire panel seemed to be alive and generated large quantities of gas, which came from the steel band. Tons of coal were crushed off the pillars and, finally, all hope of saving the section was abandoned.

Decided to Seal Off the Section

At this point, it was decided to seal off the section. I cannot agree with Richard Bowen, who comments on this point in the same issue and states, page 187, that "the safest plan to adopt is to ventilate all abandoned areas in such a manner as to prevent the accumulation of any dangerous quantity of gas within them."

It is my belief that it would have been very dangerous indeed to have left this section open, under the conditions described. Before and during the sealing of the area, roof falls were occurring daily and liberating large quantities of gas. After the panel was sealed, this condition quieted down and no further trouble was noticeable. To have left the section open would not have prevented the heavy falls of roof and the gas would have found more ready access to the workings than when the section was sealed.

In my opinion, to leave such a section unsealed would be to invite trouble. As the mine is developed and the old workings become more extensive, more air, more material and more men will be required to keep the abandoned areas ventilated and safe. The open areas would soon become a constant source of danger, particularly in a mine worked with open lights.

Large Sealed Section in an Illinois Mine

Having worked in a mine here in Illinois, where more than 600 acres of abandoned workings had been sealed off, I have been forced to the conclusion that to have attempted to ventilate those areas would have been practically impossible. Mr. Bowen's suggestion of sinking boreholes from the surface, for the purpose of draining off the gas from such areas, does not appeal to me as practicable. Even putting aside the possible danger of the gas issuing from the boreholes becoming ignited, it does not seem to me that the holes would have any appreciable effect to drain the gas from large abandoned sections where great quantities were being generated.

Before closing, let me say that changes in barometric pressure are, to my mind, largely responsible for the observed change in breathing of this sealed section. A fall of barometer is evidence of a less pressure being exerted on the sealed area, other conditions remaining unchanged in the mine. This relief of pressure must naturally be followed with an outflow of gas, from the sealed section, into the mine. On the other hand, a rise of barometric pressure would cause the mine air to flow into the sealed area. Allow me to add that while in charge as fireboss in the mine mentioned, I have frequently noted the correspondence in the breathing of this sealed section and the rise or fall in barometric pressure. Observing the change of barometer reading would enable me to foretell the breathing out or drawing in of the gas and air at the seal.

Zeigler, Ill. STEPHEN ARNOTT.

ANOTHER LETTER

Changes observed in the travel of the air current in a mine entry is here assumed as possibly effecting some change in the breathing of a sealed section of a mine.

KINDLY permit me to add a word or two regarding the observed change in the breathing of a sealed section of a mine, as described by a fireboss in the issue of *Coal Age*, Jan. 27, p. 186. It would have been of some help had it been stated how far this seal is from the intake airway of the mine; also, how far inside from the seal is a door or other obstruction to the flow of the air?

My idea is that what takes place in a mine airway is very similar to the flow of water in a stream. If the water is dammed back there is a greater head or pressure exerted; but at a point where the stream is especially wide whirls and eddies generally form.

Numerous Causes Suggested as Affecting the Sealed Area

Now, in a few words, let me say that a possible door in the mine entry, inby from the seal, may have caused a back pressure on the seal when the door was closed, with the result that air would be forced into the abandoned section if the valve in the seal was open at that moment. On the other hand, should it happen that the door was opened at the same time with the opening of the valve, the effect would be to produce an outflow of gas and air from behind the seal.

Again, assuming the seal is a short distance back in the heading, from the airway, the whirl or eddy of the air in front of the seal would have a tendency to cause an outflow through the seal when the valve was open, although this effect is comparatively slight, as I believe, and more or less the same at all times.

Another effect that I would mention has reference to the air travel in an airway, as changing from the top to the bottom, or *vice versa*, according to changes in the relative temperatures of the mine air and the outside atmosphere. To illustrate this point, let me cite an instance of my own observation not long since.

On an idle day, taking a man with me, I started to hang some wires in

the mine, on an entry where a good current of air was passing. No one was in the mine other than myself and the man who helped me. Outside, the sun was shining and the air clear and warm during the forenoon. At that time when drilling the holes in the roof, I noticed that the air was traveling along the roof, as the dust from the drill, carried along by the air, was quite annoying and troublesome.

By noon there was a change outside. The afternoon was rainy and the damp cool air entering the mine traveled along the floor. The change was quite noticeable in drilling the holes in the roof. The dust now dropped toward the floor and gave us no annoyance, as during the morning.

Relation of Outside and Inside Temperatures Important

To my mind, it would be well for this fireboss to observe the temperature outside and inside the mine, and note whether or not the air is traveling at the roof, as this will have its effect on the breathing of the sealed section when the valve is opened.

There are other causes that may have produced a greater or less effect on the observed breathing of this section. One of these, no doubt, is the roof settlement taking place within the abandoned area. Attention has been called to this by another writer, who has mentioned the possible effect of a large fall of roof within the section, which he thinks would drive the gas out through the seal.

However, if this condition continued to prevail, it would not explain the drawing in of the air during the first nine days of the test. It would only serve to explain the blowing out of the air during the five days following.

To judge intelligently the effect of these various causes must necessarily be left to the fireboss, who is on the ground and acquainted with the conditions that exist in the mine.

Thorpe, W. Va. G. W. B.

Penalize Uncertified Mine Officials

The blanket provision of Article 26 of the Bituminous Mine Law of Pennsylvania imposes a penalty on any person who neglects or fails to perform the duties required by the act.

WHILE it is true that certified mine formen, assistant foremen and firebosses may be deprived of their certificates, when found guilty of neglect to perform their several duties through incompetency or carelessness, and though they suffer more than the uncertified official who has no certificate to lose, it is not true that the law imposes no penalty on the uncertified man who fails in his duty.

This question was raised in *Coal Age*, Feb. 3, p. 234, and several articles and sections of the law quoted, which authorize the employment of uncertified men in these positions, provided the employer regards them as "equally competent" with a certified person.

Seemingly, the blanket provision contained in Article 26 of the bituminous law was then overlooked. Section 2 of that article imposes a fine not to exceed $200, or imprisonment in the county jail for a period not exceeding three months, or both, at the discretion of the court, whenever a person has been convicted of a misdemeanor under the act, in the Court of Quarter Sessions of the county. The section goes on to state: "Any violation of this act, which has been declared to be a misdemeanor by any part thereof, shall be punished in like manner." The question would seem to hinge on whether the act of which the uncertified man is found guilty is a "misdemeanor" under the law and is so specified.

Personally, I would not have an uncertified man acting in an official capacity in a mine of which I had charge. As I regard, it would be a penny-wise and pound-foolish policy to employ such a one when there are enough good certified mine foremen, assistant foremen and firebosses at hand. It may mean a few more dollars of outlay, but what is that when men's lives are at stake?

Let me say, in closing, I believe the certified man feels a greater responsibility resting on him and will take fewer chances than an uncertified man. It is true there are men in the mines who are old and experienced, though they cannot read or write and are unable to pass the examination required by law.

But there are other ways of rewarding such men than to place them in positions where the lives of mine workers must depend on their capabilities under all conditions. When accident and loss follows the employment of an uncertified man, the one who placed him in charge should be punished.

Johnstown, Pa. "SUPER."

Inquiries Of General Interest

Value of the Coefficient of Friction in Mine Ventilation

The Values Given by Different Authorities Vary Widely Owing to Various Conditions Existing in the Mines Where the Values Were Established by Experiment. The Abbreviated Atkinson Value Is Probably Most Representative of Conditions in American Mining Practice

WHEN looking over some back numbers of *Coal Age*, a short time since, I came upon a question answered in Vol. 13, p. 518, concerning the circulation of 50,000 cu.ft. of air, under a 2-in. water gage, in two equal splits, each 6 x 10 ft. in section and 10,000 ft. long. It was desired to find the size of opening required, in a regulator placed in one of these splits, such that would reduce the quantity of air passing in that split to 15,000 cu.ft. per min., assuming the power on the air remained unchanged.

In the reply to this question, it was shown that a circulation of 50,000 cu. ft. of air per minute, in two equal splits of the dimensions given, could not be produced by a 2-in. water gage, but would require a gage of 3.56 in., provided the usual value of the Atkinson coefficient of ($k = 0.0000000217$) friction was used in the calculation. It was stated that the value given by Fairley ($k = 0.00000001$) was probably employed.

The use of this smaller value given by Fairley, however, would call for a water gage of 1.78 in. It appears, therefore, that the original question must have been based on a value somewhere between the Atkinson and the Fairley values of this coefficient, say $k = 0.0000000112$. I would like to ask what is a safe value to use for the coefficient of friction, in American mining practice when estimating for power.

STUDENT.

Columbia University, New York City.

There are no less than ten or a dozen different values given by experimenters for the coefficient of friction or, more correctly speaking, the unit of resistance offered by airways and mines to the passage of a ventilating current. One of the lowest of these values is that given by Navier, a French experimenter, who gives $k = 0.000000001872$. The highest value is that found by the well known English author and investigator of mining conditions, J. J. Atkinson, who gives $k = 0.0000000217$.

It can be said that the chief cause for the variation in the values given by different investigators, must be attributed to the physical differences that existed in the airways and mines investigated. It is noticeable that the values obtained in French mines are generally lower in comparison with those obtained in English mines.

Presumably, the lower values obtained are the result of purely physical differences in the mines. Shorter and straighter air-courses having a generally greater sectional area, less obstruction by reason of the style of tim-

bering, sharp bends in the airways, and methods of splitting the air, involving the use of overcasts and the elimination of doors, together with the arching and lining of air-courses all contribute to reduce the value obtained for the coefficient of friction or the unit resistance of a mine.

Undoubtedly, these conditions vary to a greater or less extent in different American mines and mining districts. For instance, there is no doubt but that the generally larger and less obstructed airways of the anthracite coal fields will afford a lower value for the coefficient than what would be obtained in the generally longer, more tortuous and obstructed airways of the bituminous fields, in Western Pennsylvania and elsewhere in this country.

Experience and an intimate knowledge of the conditions to be met in any particular mine or district must be our guide in making a close estimation of the power required for a given circulation of air in a certain mine. Such an estimate should always be based on a specified air volume circulated under a given water gage.

In Fan Practice

Frequently, when a fan is installed at a mine, under a guarantee to produce a certain quantity of air under a given water gage, it is found that the conditions existing in the mine are such that a less or a greater gage is required to circulate the required quantity of air.

In every such case, it is evident that the fan has not been designed on the basis of the present circulation in that mine, after allowing for the effect of possible air columns. The only safe way to proceed is to first ascertain the so-called "equivalent orifice" of the mine or the mine potential, as expressed by the ratio of the quantity of air in circulation (cu.ft. per min.) to the square root of the unit pressure (lb. per sq.ft.) producing the present circulation. Or, in respect to the necessary power on the air, ascertain the ratio of the quantity of air in circulation to the cube root of the present power on the air in the fan drift.

In fan practice, the best results are obtained by estimating on a fan whose equivalent orifice is from two to three times the orifice of the mine. A fan so designed should show a manometric efficiency of between 80 and 90 per cent. In other words, the actual water-gage reading in the fan drift should be from 80 to 90 per cent of the gage due to the tip speed of the fan.

Returning, however, to the question of a suitable value for the coefficient of friction, to be employed in a given mine or district, this is of practical importance only as indicating the relative efficiency realized in the ventilation of a mine. Large unobstructed airways give a low unit of resistance, provided the air is conducted in a number of splits sufficient to afford a moderate velocity of the current.

A number of years of practice in the ventilation of mines in the Central Basin, has indicated that the general practice in mining the coal of Illinois, Iowa, Missouri and Kansas, makes the value of the unit resistance to closely approximate the Atkinson coefficient. A fact that favors the use of this coefficient is that it is on the safe side when estimating the ventilating power required for any given development.

In the preparation of the papers on Mine Ventilation, for the study courses of the International Correspondence Schools, Scranton, Pa., which papers now form a part of Vol. 145, I. C. S. Reference Library, I suggested (Sec. 13, p. 20) the use of an abbreviated Atkinson coefficient, as giving practical results. This value is $k = 0.00000002$, and I believe this is a safe value for estimation, in general bituminous mining practice, in this country at the present time.

Examination Questions Answered

Examination for Mine Foremen, Sixteenth Anthracite District

Selected Questions

QUESTION—*If a gangway is running north seventy degrees east (N 70° E) and it is desired to turn off a breast at right angles, or square with the gangway, what will be the compass course of the breast?*

ANSWER—The best method of calculating the course of a breast turned square with this gangway is by azimuths, in which the angles of all courses are computed to the right, starting from due north: thus, the azimuth of a gangway whose bearing is N 70° E is 70 deg. Then, if the room is turned to the right of the gangway its azimuth is found by adding 90 degrees to the azimuth of the gangway, which gives 70 + 90 = 160 deg. This angle being greater than 90 deg. and less than 180 deg., lies in the southeast quadrant, and the angle of the bearing is 180 — 160 = 20 deg. Therefore, the bearing of a room driven to the right of this gangway is S 20° E.

On the other hand, if the breast is turned to the left of the gangway and square with it, its azimuth is found by subtracting 90 deg. from the azimuth of the gangway; thus, 70 — 90 = —20 deg. The azimuth of this breast is therefore 360 — 20 = 340 deg. Evidently, this azimuth lies in the northwest quadrant and the angle of bearing measured from due north is 360 — 340 = 20 deg. Therefore, the bearing of a room turned to the left and square with the gangway is N 20° W.

QUESTION—*What is the elevation of the face of a breast above the gangway if the breast is 285 ft long and has a pitch of 27 deg? What length will it show on the mine map if the map is made in accordance with the law?*

ANSWER—The rise of a breast is found by multiplying the sine of the pitch angle by the length of the breast measured on the pitch, which gives in this case 285 × sin 27° = 285 × 0.454 = 129.39, which is the elevation of the face of this breast above the gangway.

The Anthracite Mine Law requires all mine plans to be drawn to a scale of 100 ft. to the inch. The horizontal distance corresponding to a pitch distance of 285 ft. is 285 × cos 27° = 285 × 0.891 = 253.93 ft. On a scale of 100 ft. to the inch, this distance would measure 2.54 in.

QUESTION—*What are the duties of a mine foreman? Whose interest should he always have in mind?*

ANSWER—The law makes a mine foreman responsible for all matters pertaining to the ventilation of the mine. He must employ a sufficient number of assistants and firebosses and know that they perform their several duties in accordance with the law. He must personally direct the operations of the mine in such a manner as to insure the safety of the men and the economical extraction of the coal. He must do all in his power to maintain and increase the daily production of the mine, while at the same time inspecting all machinery and appliances used in the mining and transportation of the coal. He must examine and sign the reports of his assistants and firebosses, investigate and report all accidents and attend any inquests that may be held.

A mine foreman should have in mind continually the interests of his employer as well as those of his men. He must be fair and just in all his dealings and see that all supplies are ordered as needed in the mine.

QUESTION—*What will be the quantity of air passing in a gangway timbered with collars 7 ft. between notches and 12 ft. spread, the clear height above the rails being 8.5 ft. and the anemometer showing 180 ft. per minute? How many men would this current support in accordance with the mine law?*

ANSWER—Assuming the dimensions given, length of collar and height above rail, are a fair average in computing the sectional area of the airway, the average width of this cross-section is ½(7 + 12) = 9.5 ft. The sectional area within the timbers is therefore, 9.5 × 8.5 = 80.75 sq.ft. Again, taking the reading of the anemometer (180 ft. per min.) as the average velocity of the air current, the quantity of air passing in this airway is 80.75 × 180 = 14,535 cu.ft. per min.

Some Results of Legislative Regulation of the Coal Industry in Indiana*

Fuel Control Act Construed as Valid Exercise of Police Power—Control of Price Called Best Remedy for Extortion—Company Reports Disclose Surprisingly Low Production Costs, Considering High Salaries to Officials and Increase in Labor Scale

BY JESSE E. ESCHBACH

ON JULY 31, 1920, the Special Coal and Food Commission of Indiana embarked on an uncharted sea. The coal industry had reached a pinnacle in profiteering never heretofore conceived of by human beings. Never before since the days of Captain Kidd had the black flag been nailed to so many mastheads on the commercial seas. Many operators, greedy and merciless, had conceived that the human race was the proper object of plunder and pillage, and that the law-making and the law-enforcing bodies of Indiana and America had long since forgotten the people for whom alone the sovereign state existed.

During the entire controversy over the law and the orders of the Coal Commission, all that you could get a large class of the operators and jobbers and their lawyers to talk about in court or out of court was the sacred right of property, meaning their property and their right to charge any outrageous and extortionate price the suffering public would pay, seeming to forget or refusing to consider that there is such an element left in human life as the rights of the people.

The Special Coal and Food Commission faced an unsolved problem with a novel and untried law, and the people faced a grave and critical emergency and possible suffering. In four short months the commission obtained the opinion of the second highest court in the land as to the validity of the act. They fixed the price of coal in the hands of all producers, dealers and consumers; caused to be distributed directly and indirectly 1,500,000 tons of Indiana coal at a saving of more than $3,000,000 to the people, and passed and relieved one of the gravest emergencies which ever existed, without a single case of actual suffering, and in that period reduced the cost of coal to the oridinary consumer from $3 to $5 per ton.

A LANDMARK IN AMERICAN REGULATIVE LEGISLATION

The passage of the act creating the Special Coal and Food Commission of Indiana was a landmark in American legislation. Never before had any commonwealth in America attempted to regulate the coal industry or to create a price-fixing body for the output of said industry. The act not only created a body or commission with power to investigate the coal industry and fix the price for the output thereof but it placed in the hands of the commission the means by which it could take care of the needs of the inhabitants of the state with an equitable distribution of the coal mined therein, and in emergency cases could prevent suffering. There is little doubt among fair-minded American citizens, conversant with the subject, that this act was a valid exercise of the police power.

Judges Francis E. Baker and Evan A. Evans of the Circuit Court of Appeals of the United States for the Seventh District, and Judge Ferdinand A. Geiger of the District Court of the United States for the Eastern District of Wisconsin, on Sept. 6, 1920, in the Federal Court of the United States in the City of Indianapolis, sustained the constitutionality of the act and dismissed the motion for a preliminary injunction of the American Coal Mining Co.

In the course of the opinion rendered by Judge Baker he said:

"Among the powers surrendered [by the states], of course, was the power over interstate and foreign commerce, treaty making, the war power, and others. But there remained to the people of Indiana, as absolute sovereigns, the whole of the police power over matters within the state. That means the power of the people to determine upon measures for the public welfare, which may be expressed by the Legislature without any limitation that is not imposed upon the state by the Federal Constitution.

"In such cases the right to exercise the police power is based upon the fact that they either had a public charter, exercising a public power, like that of eminent domain, or they were performing a public service. But there are other cases in which none of these elements of a charter, or the power of eminent domain, or a public service, or a devotion of property to public use, appears.

"How about the laws, in this coal-mining industry, relating to the furnishing of timbers and props, and cages, and ventilation, and the general taking away of the freedom of contract between the mine operators and the miners with respect to the conditions under which they shall work? Under those laws it was no longer permissible for them to barter about what should be done with respect to the conditions in the mines. There was an absolute standard fixed, and the mine operator was absolutely prohibited from doing certain things. Why that law? Because of the dominance of the operator it was found by the Legislature that the men needed protection. The same thing is the basis of all our inspection laws. All of these things that are controlled in that way may be inspected, and the cost of the inspection charged against that particular industry, just as the examination of banks is charged against the banking business.

COMPARISON WITH MORE FAMILIAR RESTRICTIONS

"Those are all familiar restrictions. Thousands of them could be cited, but they are all over on the other side, and there is a clear line dividing them from the cases that are based upon franchises and the exercise of eminent domain—the employment of streets for water and lighting and transportation purposes. These have no basis at all except upon the power of the people to restrict the theretofore existing circle in which a person had his life, and the one within which he had his liberty, and the one within which he had his property, to bring these down narrower on account of conditions that were found to be oppressive to the people.

"There is no infringement of the right of a man to hold property, if, under the power of eminent domain, it is taken from him for a public use and the fair value of it is paid him. That is a constitutional thing, and there is no objection to it. So, when it comes to regulating the returns that he shall receive from his property, that is not taking his property; it is simply a control of his property as an instrument in his hand, with which the Legislature has found that he has been bludgeoning the people.

There has been one statute that from the earliest times has stood over on this side of the line purely as an interference with the right of contract and regulating the price. Take the case of the lender making a loan to a man at usurious interest. Now, what is a loan? A loan is really a sale. Title passes at once. Money is a commodity. Bankers buy and sell money. Now, here is one line of business that never has depended, as a basis of control, upon the power of eminent domain, or a public service. It is

*Abstract of an address by the chairman of the Special Coal and Food Commission of Indiana, delivered Dec. 15 before the Purchasing Agents' Association of South Bend.

private business. Nothing could be more private than the pawnbroker's business, and yet from time immemorial it has been unquestioned that the power existed to regulate that business by fixing the prices for money. I am unable to distinguish the underlying principle in that case from this, or from the statutes regulating rentals.

"No dispute has ever arisen when health and morals were concerned. When you get down to welfare the question is frequently raised about financial considerations. But, of course, the state has a right to protect its people with respect to financial considerations. All of our blue-sky laws, and our married women surety laws, and our laws restricting the sale of patent rights, and our laws controlling fire insurance rates, and our exemption laws, are all financial questions, looking to the welfare of the citizens of the state, and, ultimately, the welfare of the state, because the state has an interest in the welfare of all of its citizens and inhabitants.

"But, as we have heretofore indicated, control of prices is known of old as a remedy for extortion. We are satisfied that the general power of the state to touch, in some way, upon the coal-mining industry, exists."

The only question that can be involved in an attack on the constitutionality of the law is whether or not the coal industry is such an industry that it is affected by the public interest. With very few exceptions every hamlet, town and city in America would be in darkness; not a pound of freight and not a passenger would be moved; the wheels of industry would stop, and the population in America would be cold and hungry if the coal industry were to cease. No industry in America is so affected by public interest and so affects the public interest as does the coal industry, and it does not require the judge of a court or a constitutional lawyer to understand this.

Expect Confirmation by U. S. Supreme Court

There is a little doubt that the Supreme Court of the United States will eventually sustain the action of the Special Coal and Food Commission of Indiana in fixing prices and in regulating the industry. How far the court will go in sustaining any interference with interstate commerce no one at this time can tell.

With the act creating the Special Coal and Food Commission, the observations of Judge Baker as to the rights of the state not only to regulate the industry and fix the prices but to compel the production of sufficient coal to meet both the requirements of interstate and intrastate commerce, and with the knowledge that the people of the Commonwealth of Indiana were being obliged to pay extortionate and unheard-of profits for their coal, the Special Coal and Food Commission undertook, before the severe weather of winter should come, to bring relief not only as to supply but as to prices.

The accountants for the Special Coal and Food Commission were assigned to the various coal-producing companies of Indiana with instructions to produce for the use of the commission the cost of each of said companies in the production of coal. Bearing in mind that the act provided that every person engaged in the coal industry—operator, jobber or retailer—must receive a reasonable return on his investment, and that there must be no confiscation, the commission promulgated three orders.

Order No. 1 fixed the price of coal for the coal-producing companies of Indiana. In the preparation of this order the commission was confronted with the difficult problem as to the method and classification to be followed. Perhaps the most nearly correct economic method was to fix the cost of production of every producing company in Indiana and to this cost add a reasonable return and profit. To this method there were several objections.

There would be as many different prices of coal in Indiana as there were producing companies, and the entire coal market would be thrown into confusion. There would have been more opportunity for unjust treatment of the consumer; the method would have offered inducements for inefficient rather than efficient methods of production, and the prices fixed would have been subject to change with every change in the cost of production. This method was rejected because of said objections.

The second method was to fix the same price for all mines in the State of Indiana, which would necessarily have been the cost of production of the highest-priced coal in the state plus a reasonable return thereon. This would have afforded little relief to the people and would have given a large percentage of the coal-producing companies an abnormal and unreasonable profit.

The method finally adopted was to arrive at the correct cost of production for each mine and place the mines of the state in four groups. To the cost of production for the highest-priced mines in each group there was added a reasonable return, and the price of coal in that group was fixed for all said producing companies.

The prices fixed for the first group were as follows: For screenings, $2.80 per ton f.o.b. mine; mine run, $3, and prepared sizes, $3.25, to which the operator might add 15c. per ton if he maintained his own selling force. If the coal was sold through jobbers or wholesalers the producing company could not add the 15c. but the wholesalers or jobbers were entitled to said 15c. per ton, but there could be but one such 15c. margin without regard to the number of jobbers or wholesalers handling the coal.

Group 1, which was the lowest price, produced approximately 73 per cent of all the coal in Indiana. The other groups were two, three and four, based on their cost of production. Group 3 was made up largely of wagon mines, which as a rule can exist only through the period of high prices and are compelled to haul their coal varying distances from the mine to the car. Group 4 was made up of the mines from which Brazil block was produced. There is a very limited supply of Brazil block coal in Indiana and such supply is constantly diminishing.

Order 2 fixed a margin for wholesalers and jobbers as indicated, or 15c. per ton without regard to the number who might handle it. Order 3 fixed the margin for retailers, the general margin being $2.25 per ton, which would include all coats from the unloading of the car to the dumping at the curb of the consumer.

In a number of cities where labor and economic conditions were acute, the retailers were allowed $2.40 and $2.50 gross margins, there being an additional allowance of 25c. per ton for anthracite and 25c. delivery charge for part ton deliveries.

Retail Handlers of Coal Too Numerous

The retail coal business is in the same condition as practically every other retail business in America. There are at least 50 per cent, and possibly 75 per cent, too many dealers, and very few dealers handle sufficient quantities to give a reasonable return on the investment. We are further of the opinion that the equipment of 75 per cent of the retail coal dealers in America is antiquated, broken down or entirely inadequate, and the handling of coal is one of the most expensive businesses because of the poor equipment and inefficient management.

Immediately upon the promulgation of the price-fixing orders there appeared what impresses the public as a concerted action on the part of the producing companies to deprive the citizenship of Indiana of Indiana coal. Many methods were resorted to, the principal one being the shipment of all Indiana coal out of the state. In order to meet this situation the commission issued its order No. 8, which is known as its allocation order, directing each producing company in Indiana to sell or order for sale within the State of Indiana a designated number of tons of coal, which was approximately 30 per cent of their output, or about the same percentage of Indiana coal as is used and consumed within Indiana.

Under the allocation order of the commission, and until Nov. 29, the day upon which the Federal Court issued its temporary restraining order, the producing companies of Indiana sold within the State of Indiana approximately 1,500,000 tons of Indiana coal at a net saving of more than $3,000,000.

As the emergency became graver and the weather became more severe, conditions existed in various communities calling for more drastic remedies, and the commission under section 20 of the act resorted to emergency orders and issued to the various producing companies of Indiana an order directing that in a given designated community

where there existed a grave emergency from which the inhabitants thereof were likely to suffer, said producing companies consign to said community upon their first working day a certain fixed quantity of coal and continue said shipments at fixed periods until certain quantities of coal had been delivered in said communities.

Under these orders the Special Coal and Food Commission distributed approximately 2,159 carloads of Indiana coal, or more than 100,000 tons, with a saving of approximately $300,000 and without a single case of suffering in the state.

The question presented to the U. S. Court in the hearing on Nov. 27 was whether or not the emergency orders and the allocation orders of the commission did not interfere with interstate commerce in those cases in which the producing company, or companies, had contracts with railroads or persons in other states for the output of their mines. Upon a hearing for a temporary restraining order the U. S. Court held that such orders did in such cases interfere with interstate commerce and as to the two companies, petitioners in said case, the Special Coal and Food Commission be restrained from enforcing such orders.

It is to be remembered that during all the period from Oct. 6, the day upon which our price-fixing order became effective, until Nov. 29, the coal consumers outside of Indiana were still paying the exorbitant prices which made our act necessary, and had it not been for such act and the orders of the Special Coal and Food Commission the citizenship of Indiana would have paid such prices for the 1,500,000 tons sold in Indiana.

Cites Thorough Organization of Coal Industry

The coal industry is the most thoroughly and minutely organized industry this country has ever known. It has its National Coal Association, its state coal associations and its district coal associations in all bituminous fields. The effectiveness of these organizations for the betterment of the industry itself perhaps cannot be questioned. Whether or not the public received the proper consideration is another question, and the past six months does not indicate that the associations have any particular care for the needs of the public.

I venture the assertion that the American people will never again submit to the extortion and profiteering which have been practiced by some of the coal operators within the past six months. The American people are patient and long suffering, believing that their legislative bodies and their courts represent them in securing and maintaining their rights. For long periods they submit to economic oppression and injustice and extortion, but when they become awakened and realize the injustice and the perpetrators of such injustice they apply other remedies quickly, directly and drastically.

Some of the profits made by wholesalers, retailers and producing companies are unheard of and will never again, we believe, be tolerated by the American people. Every American citizen in principle denounces profiteering—the newspapers, the judges from the bench, the legislators, the merchants—and as a generality profiteering affords a wonderful opportunity for grandstand playing by the pettifogger and the profiteer himself. "Stop thief" is one of the most common methods of turning the public gaze in the public pursuit from the guilty to the innocent, and all profiteers, without exception. are perfectly willing to have all other profiteers, except themselves, regulated and punished.

Since the issuance of the temporary restraining order on Nov. 29, twenty operators in Indiana have submitted to the commission voluntarily their cost sheets. Of course, these cost sheets would come only from the companies whose profits are the most reasonable. Of these twenty companies the largest producer in ten months from Jan. 1, 1920, to Oct. 31, 1920, produced 301,530 tons at a cost for the entire ten months of $1.757 per ton.

The commission fixed the price of the coal from this mine as follows: Prepared sizes, $3.25; mine run, $3; screenings, $2.80. This cost of production was based upon the company's own figures after every possible charge, including an abnormal depreciation and depletion fund, large salaries for every officer, and in the ten months on an approximated cash investment of $200,000 this company alone made $376,192 net profit. For the month of September, after all wage increases were in, it made a net profit, even at $3 per ton, of $41,800, and in October $45,337.

The smallest production of the twenty companies was that of a wagon mine, which produced in the ten months 11,231 tons at an average cost of $2.184 per ton. In the month of September it produced 1,110 tons at a cost of $2.44 per ton and in October 893 tons at a cost of $2.57 per ton. If this wagon mine sold its output for the ten months at the prices fixed by the commission it would have showed a net profit for the ten months of $24,327.05—this after every conceivable charge and large salaries to all of its officers.

As the running time increases, the cost decreases per ton, and if the selling prices were to be fixed on the cost for the months of September, October and November, 1920, it would be appreciably lower than the prices fixed in order No. 1 of the commission, or the margin of profit would be much higher.

On Nov. 21 blank cost sheets were sent out to all licensed operators, asking them for a report of their costs by mines for the months of September and October, 1920. The temporary restraining order was granted against the commission in the case of the Vandalia Coal Co. and the Vigo Coal Products Co. vs. the commission on Nov. 27, and since then we have received no reports from the commercial mines of the state. Twelve companies, however, reported before the injunction was issued, and they will serve to show the effect of the increased running time.

During the ten months ending Oct. 30, 1920, these twelve companies produced 1,259,083 net tons of coal at average cost, according to their own reports, of $2.18 per ton, the lowest cost being 301,530 tons at $1.757 per ton and the highest cost being 67,196 tons at $2.593 per ton.

Gives Some Cost and Production Figures

During the month of September these companies produced 155,847 tons at an average cost of $2.30 per ton, the lowest cost being 36,894 tons at $1.867 per ton and the highest 64,453 tons at $2.53 per ton. During the month of October the same companies produced 192,671 tons at an average cost of $2.15 per ton, the lowest cost being 39,017 tons at $1.839 per ton and the highest 38,241 tons at $2.54 per ton. Eighty per cent of the 192,671 tons produced in October, or 154,430 tons, was at an average cost of $2.06 per ton, coming from nine of the twelve companies.

A large mining company alleged it could mine 8,000 tons a day. Last year it really mined 800,000 tons at approximately or a little less than $2 per ton. If this company is allowed full time on its own figures, it will mine 1,600,000 tons a year. We have allowed it an approximate net profit of $1 a ton, which would make a net profit of $1,600,000 on a capitalization of $1,500,000.

Two small companies with a total output of 23,000 tons in April, with practically the same stockholders and same officers, pay their president alone $20,400 a year salary. These companies, even with these abnormal salaries, showed a production cost in the month of April of $2.58 per ton and $2.59 per ton, which included all such salaries and the 23 per cent increase in wages which took effect April 1.

Another company incorporated with an entire capitalization of $10,000 has been paying officers salaries alone of $24,000 a year. In April this company, with these high salaries included, mined coal at a production cost of $2.50 a ton and in May $2.26 per ton. Another company with a total investment of $64,000, including every possible item, has been making returns of $2,700 net profit a month, its depletion and depreciation all being figured on the present abnormal price of everything entering into production costs and depletion being fixed on its coal lands at the present high price of coal. Still another coal company, with a production of 16,414 tons in April, paid officers salaries alone that month of $9,375, or 57.11c. per ton, asserting that the actual charge that ought to be made for officers' salaries is $3,750 per month, or 22.84c. per ton. With all such abnormal salaries added in its production costs and with the 23 per cent labor increase effective April 1, the company produced coal that month at a cost of $2.36 per ton.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

"MOST convincing evidence that we are on the high road to recovery," says Archer Wall Douglas, chairman of the Committee of Statistics and Standards of the Chamber of Commerce of the United States, "is found in the universal report, brought by traveling salesmen from every section of the country, of steadily growing sentiment that 'business will be better in the spring'—not a sudden return to prosperity, which is neither likely nor desirable, but a slow and natural working out of those processes of liquidation, which are now in full operation.

"There are few who are more responsible than these same traveling salesmen for the growth of this healthy sentiment, which in effect is the recognition of the inherent soundness of the situation, and that the remedies for it lie largely in constructive action. Not only is sentiment improved, but there is definite increase in the volume of business done. It is not a very great increase, but, as Mercutio says, ''Twill do,' for it forecasts the beginning of better days. Farmers are gradually bringing their produce to market. Bankers are slowly 'loosening up' and extending to farmers and dealers money and credit, the two vital factors needed to restore the situation.

"Out in the world of cold, hard facts, few take much stock in the current prophecies of the coming of a new prosperity at any specified date. Nor yet in those mystic charts which foretell when declines will cease, and business resume its upward march. For it is perfectly obvious that prices have not reached bottom in all lines, and even a Wall Street lamb does not buy heavily on a falling market. The general thought inclines to early spring—March or April—as the date when distinctly definite improvement will set in, though in many parts of the Cotton Belt the belief is that June is early enough to expect a decided change. Yet scarce any believe that present conditions will prevail throughout the year.

"All are agreed that the only way to hasten matters is by the general exercise of the homely virtues of hard work and economy."

Ford Plant Soon to Work at Normal

The Ford Motor Co.'s plants will be in full operation in a few weeks, Henry Ford said Feb. 23. Men are being rehired as fast as the company can take care of them. Orders for 79,000 cars in March have already been received, Mr. Ford stated, and the blast furnaces and tractor plants at River Rouge have been set in operation. Between 15,000 and 20,000 men are employed in the Rouge plants. Three thousand men were to be rehired at the Highland Park plant before the end of the week, bringing the total working force in that plant to nearly 20,000.

Holyoke Paper Workers End Strike

All of the workers of trades allied with the paper industry involved in the controversy with the Croker-McElwain and Chemical Paper companies, Holyoke, Mass., who have been on strike in resistance to the individual contract system returned to work Feb. 17, and it was indicated that the paper makers, members of Eagle Lodge, would go to work Monday, Feb. 21, following the recommendations of a special committee pending the drafting of a new agreement. Confidence was expressed following a conference with the paper manufacturers that Eagle Lodge would accept the contract.

Sharon Steel Hoop Mills Resume

The Sharon Steel Hoop Co., Sharon, Pa., announced that four of its finishing mills, which had been shut down for some time, would resume operations Monday, Feb. 21. Five hundred men were to return to work. The open-hearth furnaces and the blooming mill of the concern, however, were not to reopen yet.

Textile and Shoe Trades Improve

Activity in shoe manufacture and definite improvement in textile lines, as compared with three months ago, are reported by the Associated Press from centers in New England. The shoe industry, virtually flat last fall, has taken a spurt as a result of Easter demands. Manufacturers say they look for a return to normal production by the end of the year. Production of cotton textiles has increased by from 25 to 50 per cent and more in some special lines. In New Hampshire, Rhode Island, Maine and Massachusetts a distinct advance is reported. In the two leading industrial lines in Manchester, N. H., it is estimated that about 14,000 now have steady work, whereas during the latter part of 1920 less than half this total was employed only three days a week, with complete shutdowns for varying periods. Except in the Fall River print cloth industry, where the mills employing 35,000 are operating on full time, few instances of a return to normal have been reported. In New Bedford 30,000 of the 40,000 operatives of the cotton, yarn and cloth mills are employed, while three months ago there was employment for only 17,000 two or three days a week. Mill men estimate production at 50 per cent of normal, an increase of 42 per cent. In Lowell and Lawrence textile conditions are gradually improving.

Jersey Central Shops Close

Two thousand workers in the repair shops of the Central Railroad of New Jersey at Elizabeth, N. J., were thrown out of work Saturday, Feb. 26, following an order issued by C. E. Chambers, superintendent of motive power of the railroad, that the plant be closed indefinitely. The shops at Ashley, Pa., and Mauch Chunk, Pa., also will be closed, Mr. Chambers said.

South to Make Artificial Silk

Twenty-four Southern girls went to Belgium last fall to learn the art of making artificial silk so that they might teach it to hundreds of others in this country. They are now at Hopewell, Va., where the Tubize Artificial Silk Corporation is about to open a big plant for the manufacture of this product. When the Hopewell plant opens it will employ close to 5,000 people, mostly women and girls. Once its output has reached certain quantities no more artificial silk will be imported from Belgium, for then the same product, made from American cotton linters, with American chemicals and turned out by American workers, will be in the market. The plant will specialize in the fine threads needed in the underwear and similar trades.

World Atlas of Commercial Geology Published by U. S. Geological Survey

COAL men interested in the export trade may find of value the first part of the World Atlas of Commercial Geology just published by the U. S. Geological Survey. The atlas is a product of studies of the world's supply of essential minerals begun during the world war as a part of the task of keeping American industries supplied with raw material. Part I, dealing with the production and distribution of minerals, consists of seventy-two maps, size 10½ x 13½ inches, and seventy-two pages of text of like size.

The section dealing with coal includes eight maps and eight pages of text. The coal maps are as follows:

(1) Production and consumption of coal in 1913, by countries; production of coal in 1913 and approximate outlines of coal fields: (2) North America, (3) South America, (4) Africa, (5) Europe, (6) Asia, (7) Oceania; (8) production of coal in the United States in 1918 and outlines of coal fields other than lignite.

Explanatory text accompanying the maps sketches the broader outlines of the world's coal trade. The discussion is necessarily brief as it attempts to cover the production, distribution and consumption of coal in each of the major countries of the world. Like treatment is given to petroleum, oil shale, natural gas, and 26 other minerals.

The price set on the atlas, $2, is to cover the cost of printing and engraving. Payment may be made by money order or in cash. Orders should be sent to the Director, U. S. Geological Survey, Washington, D. C.

Twenty-nine Companies Submit Bids on Coal for Panama Railroad Co.

BIDS submitted by twenty-nine coal firms for furnishing the Panama Railroad Co. with 750,000 tons of Pools 1 and 2 coal, which were opened Feb. 18 in New York City, are given below. The proposal of the Pocahontas Fuel Co. provided that a price be named monthly.

Name of Bidder:	Aggregate Tonnage	Pools or Coal Name	Price
A. C. Atwater & Co., Inc.	180,000	Poca. M/R	$4.00
A. C. Atwater & Co., Inc.	60,000	Poca. M/R	4.10
A. C. Atwater & Co., Inc.	60,000	Poca. M/R	4.20
Crozer-Pocahontas Co.	750,000	Pool 1	4.00
C. G. Blake & Co.	240,000	New River	4.00
Castner, Curran & Bullitt, Inc.	300,000	1 and 2	4.00
Ft. Dearborn Coal & Export Co.	100,000	Pool 2	4.25
Interstate Coal & Dock Co.	100,000	Pool 1	4.24½
Flat Top Fuel Co.	120,000	1 and 2	4.00
J. W. Lowe Co.	50,000	Pool 1	4.35
Manhasset Coal Co.	12,000	Pool 2	4.39
Smokeless Fuel Co.	120,000	Pool 1	4.00
United Collieries Corporation	100,000	1 and 2	3.80
United Collieries Corporation	75,000	1 and 2	3.99
Pocahontas Fuel Co.	300,000	Poca.	....
Chesapeake & Ohio Coal & Coke Co.	180,000	1 and 2	4.25
Maryland Coal & Coke Co.	120,000	Pool 2	4.25
White Oak Coal Co.	104,000	Pool 1	4.00
Fayette Smokeless Coal Co.	180,000	Pool 1	3.90
Chesapeake & Ohio Coal Agency	100,000	1 and 2	4.00
Central Pocahontas Coal Co.	120,000	1 and 2	4.00
Ajax Coal & Mining Co.	250,000	.....	7.53
Dexter & Carpenter, Inc.	120,000	Pool 1	3.85
Bluefield Coal & Coke Co.	120,000	Pool 2	4.20
Leckie Coal Co.	60,000	Pool 1	4.25
New River Coal Co.	60,000	Pool 1	4.00
Weston Dodson & Co., Inc.	20,000	Pool 1	4.00
Northern Coal Co.	60,000	1 and 2	4.00
Houston Coal Co.	120,000	1 and 2	4.15
Raleigh Smokeless Fuel Co.	10,000	1 and 2	3.75
Pocahontas Coal Sales Co.	60,000	Poca.	4.00
L. A. Snead & Co.	100,000	1 and 2	3.50

Enjoins P. C. C. & St. L. R. R. from Enforcing Embargo in Violation of Contract

IN A SUIT brought by the Knox County Fourth Vein Coal Co., Indianapolis, against the P. C. C. & St. L. R.R. Co. to enjoin it from maintaining an embargo against the company's mine located at Westphalia, Ind., Judge Albert B. Anderson of the U. S. District Court, Indianapolis, issued a preliminary injunction on Feb. 16 against the railroad, restraining it from enforcing the embargo.

The complaint states that on Sept. 4, 1920, the Chicago, Milwaukee & St. Paul R.R. contracted for the entire output of the Knox County Fourth Vein Coal Co.'s mine, to run until March 31, 1921. On Feb. 4 the P. C. C. & St. L. R.R., which was the intermediary carrier for the C. M. & St. P. R.R., placed an embargo against the coal company's mine, the complaint setting forth that this embargo was placed at the request of the C. M. & St. P. R.R. The complaint sets out that the contracting road had never notified the operator of any cancellation or rescission of the contract. It was also set forth that when this contract was made the coal company had to cancel contracts with its other buyers and instruct them to purchase coal in the open market and reimburse these buyers for the difference between their contracts and the market price.

The complaint brought out that under the Hepburn Act the P. C. C. & St. L. R.R. was, as a common carrier, required to transport the coal from the Westphalia mine. The facts were not disputed by the defendant, and entry of the restraining order was placed by the court. The case is important in that it prevents a purchaser of coal from evading valid contract commitments by interposing an embargo against the shipper.

Bill to Codify Mining Law Introduced in Indiana General Assembly

CODIFICATION of the laws regulating the business of mining coal and a raise in the salaries of the chief deputy inspector of mines and mining and his deputies are embodied in a bill introduced in the Indiana General Assembly Feb. 15 by Senator Clem J. Richards, of Terre Haute. A commission, to consist of two practical coal miners, two operators, and two members of the department of mines and mining, and appointed by the Governor is provided to examine and revise and codify the laws regulating coal mines. Provision also is made to raise the salary of the chief deputy from $2,000 to $3,500 a year and the pay of his deputies from $1,500 to $2,500 a year. Heretofore places of competency examinations have been at Washington, Daviess County; Brazil, Terre Haute, and specified localities, some of which are no longer important mining centers. The new bill provides that the chief deputy may hold examinations wherever he sees fit. New regulations governing ventilation, safeguarding of live wires, washhouses, housing of explosives and warning bells are included in the bill.

Court Gives Ruling Ending Kansas Strike

BY DECIDING that Carl Mishmash must be paid by the Mackie Fuel Co. the wages of an adult workman the Industrial Relations Court of Kansas, on Feb. 20, broke up the strike which had lasted two weeks, the calling of which was the cause of the incarceration of Alexander Howat, the district president of the United Mine Workers of America, and other officials of that organization. The court required the mine workers to go back to work and the company to pay the clerk of the district $187 for Mishmash's back wages.

AT THE HEARING BEFORE the Federal Power Commission on the project to develop water power and supply water from the Great Falls of the Potomac, Secretary of War Baker, chairman of the commission, said the country ought to develop all available water power in order to conserve coal. A proposal to develop steam power near a coal mine in Western Maryland or near Piedmont, W. Va., in lieu of the power development at Great Falls, was advocated by F. R. Weller, of the District of Columbia Board of Trade. He argued that water power plants could not compete with steam power plants developed near coal mines.

GENERAL AND INCREASING UNEMPLOYMENT continues among the seamen and dock laborers throughout the United Kingdom. Cardiff reports exports of coal improving. A slump in freights is reported at Liverpool, 80 tramp steamers being idle. Hull reports 2,000 seamen and 2,600 dock laborers idle.

Foreign Markets and Export News

Export Business Lacking; Freight Rates Easier

There are few export orders in the market and comparatively few boats asking for this business, according to W. W. Battie & Co.'s coal trade report of Feb. 14. The freight market, therefore, is very sluggish and rates are somewhat easier.

Freight rates by steamer are about as follows:

	Feb. 7, 1921	Feb. 14, 1921	Tons Discharged Daily
Malmo	About $6.25	About $6.25	1,000
Copenhagen	About 6.25	About 6.25	1,000
Stockholm	$6.50/ 7.00	$6.50/ 7.00	800
Gothenburg	About 6.25	About 6.25	1,000
Antwerp/Rotterdam	3.75/ 4.00	About 4.00	1,000
Hamburg	About 4.50	About 4.75	1,000
Fr. Atlantic ex Rouen	4.25/ 4.50	4.25/ 4.50	700
Lisbon	About 5.00	About 5.00	700
Algiers	About 6.00	About 6.00	800
West Italy	5.50/ 5.75	5.50/ 5.75	1,000
Marseilles	5.50/ 5.75	5.50/ 5.75	1,000
Piraeus	About 6.50	About 6.50	1,000
Trieste/Venice	About 6.50	About 6.50	1,000
Port Said	About 6.00	About 6.00	1,000
Alexandria	About 6.00	About 6.00	1,000
Constantinople	About 6.75	About 6.75	500
Gibraltar	About 5.00	About 5.00	1,000
Teneriffe	About 5.50	About 5.50	500
Pernambuco	About 6.50	6.50/ 6.75	500
Bahia	About 6.50	6.50/ 6.75	500
Rio	5.75/ 6.00	About 6.00	750
Santos	About 6.25	6.50/ 7.00	500
Buenos Aires, La Plata or Montevideo	5.50/ 6.00	About 6.00	500
Para	About 6.50	About 6.50	500
Rosario	About 6.50	6.50/ 7.00	750
To Nitrate Range	About 5.00	5.00/ 5.25	500
Havana	2.50/ 2.75	About 2.50	500
Sagua or Cardenas	About 4.00	About 3.75	300
Cienfuegos	About 3.50	About 2.75	400
Caibarien	About 4.00	3.50/ 4.00	300
Guantanamo	About 3.50	3.25/ 3.50	500
Manzanillo	About 4.50	3.50/ 4.00	300
Bermuda p. c. and dis. free	About 3.00	About 3.00	300
Kingston	About 3.25	2.75/ 3.00	400
Barbados	About 3.50	About 3.25	500
St. Lucia	About 3.50	About 3.25	500
Santiago	About 3.50	About 3.25	500
Port of Spain	About 3.50	3.25/ 3.50	500
Curacao free p. c. Curacao	3.75/ 4.00	About 3.25	500
St. Thomas	About 3.25	About 3.00	500

All above rates gross form charter.

Japan Coal Enterprise in Saghalien

A semi-official company with a capitalization of 80,000,000 yen, of which the Japanese Government will own one-half, is to be formed for the exploitation of the mineral deposits of Saghalien. The island is believed to have some of the richest coal deposits in the world, estimates of experts as to the extent of the deposits varying from half a billion to seven billion tons. The company will also improve ports and build railways needed for the marketing of the output.

Berlin Wants English Coal

Berlin industrial works and utility plants will be supplied with English coal, according to plans now in progress. English coal is now being delivered in Hamburg at 30s. per ton. Thence it will be transported by waterways to Berlin, where it is expected it can be sold to industries after payment of this extra freight and a small customs duty at between 330 and 450 marks (nominally $78.54 to $107.10, but actually $5.67 to $7.74) a ton. This figure is about 100 marks higher than the price of German coal, but, in view of the shortage in the majority of works, the owners have agreed to buy.

The principal cause of this situation is that of the Upper Silesian output—450,000 tons monthly—has to be delivered to the Entente. The unsatisfactory condition of railway transportation also contributes to it.

Coal Imports at Dunkirk During 1920

Figures furnished by Consul P. C. Squire, Dunkirk, France, show that during the year 1920 2,035,839 tons of coal arrived through the port. England supplied 1,266,356 tons, United States 649,947 tons, and Germany 119,536 tons. The heaviest importation from America, 215,001 tons, took place during the month of November, due to the British miners' strike of that period. During December American coal was quoted as low as $12.60 per ton c.i.f.

The following table shows importation of coal together with origin, by months, in tons:

Months	Great Britain	America	Germany
January	157,313	.....	14,744
February	122,812	.....	14,822
March	137,233	4,025	3,000
April	93,174	13,450	19,780
May	15,603	4,328	14,129
June	74,591	11,313	23,321
July	66,662	35,116	16,134
August	45,072	41,863	7,900
September	6,140	56,510	2,922
October	433,222	150,115	2,784
November	39,201	215,001	.....
December	75,333	118,226	.....
Total	1,266,356	649,947	119,536

BRITISH COAL AT THE PIT has lately been quoted at 30s. a ton and the fall in ocean rates makes for easier American competition. The recent arrival of a cargo of Pennsylvania coal consigned to the Gas Light & Coke Co., London's largest gas producer, caused some alarm in British coal markets. This coal, which was the first serious invasion of the British home market, was delivered in London cheaper than coal from Northumberland, Wales or Durham.

BITUMINOUS EXPORTS from the United States in 1920 amounted to approximately 34,000,000 gross tons with a valuation of $304,000,000. The value of the 18,000,000 tons shipped in 1919 was $84,000,000. Shipments to Canada were about 14,500,000 tons; South America, 3,500,000 tons; West Indies and others, 2,100,000; exports across the Atlantic totaled 14,000,000 tons.

TRANSPORTATION OF AMERICAN COAL arriving at Hamburg is permitted by railway only if its destination is not more than 100 kilometers (approximately sixty miles) distant, under a decision of the Imperial Coal Commissioner. Coal consigned to cities which may be reached by waterways will be excluded from shipment by rail.

IN VIEW OF THE SERIOUS SHORTAGE of coal in India, the Government of India has been compelled to issue very stringent orders restricting exports. The shortage is due partly to inadequate labor supplies and other local labor troubles, and partly to a deficiency in railway rolling stock.

BRITISH MINE OWNERS are disturbed over the fact that Belgium has so far recovered from the war as to be able not only to supply her own needs but to do considerable exporting. In France there is a glut of German coal, while America has entered into heavy contracts to supply Scandinavian countries, the contracts being carried out so expeditiously that very little British coal has been required or asked for.

Though Vitally Amended, Calder Bill Gives Broad Power To Trade Commission; La Follette Urges Enactment

By Paul Wooton
Washington Correspondent

MATERIALLY amended, the Calder coal bill has been reported to the Senate and every effort is being made to effect its enactment into law at this session of Congress. As this is written it is the belief of disinterested Senators that the bill has no chance to pass.

The sections of the original bill authorizing the Federal Government to fix prices, commissions and margins during emergencies or threatened emergencies; to control the production and distribution of coal; to operate a drastic licensing system and to fix a brokerage tax on dealers and jobbers were eliminated in the bill which was reported to the Senate. Senator La Follette, chairman of the Committee on Manufactures, reported the bill. He calls it a bill providing for "current publicity of information concerning the coal industry and trade." This doubtless is to be the keynote of the fight for the legislation, but opponents of the measure see in it far more than additional publicity requiring coal operators, jobbers and dealers to furnish information concerning ownership, tonnage produced, costs, sales, margins and profits.

The significant part of the measure is that it gives sweeping powers to the Federal Trade Commission, now operating under the act based on the Interstate Commerce clause in the Constitution, founded on the public health and general welfare of the people. This evidently is an effort to give constitutionality to the law and to put Congress on record as regarding the ownership, production and distribution of coal to be "charged with public interest and use." If this section should be enacted into law, it would be the cornerstone of federal regulation of all essential industries, many believe.

Operators Fear Obligatory System of Accounting

The power of the Federal Trade Commission has been thoroughly defined and limited in the Maynard case, wherein it was pointed out that the commission's power rests solely and exclusively in the commerce clause. Many see the main object of this bill to be an attempt to grant the Federal Trade Commission a broader foundation for its operations. Should this provision be enacted into law and that law upheld, it would mean that the Federal Trade Commission would have undisputed power to supervise every business activity in connection with coal. An immediate outcome of the passage of the law would be, in the opinion of coal operators, an attempt on the part of the Federal Trade Commission to set up its cost accounting system in each mine and in each wholesale and retail selling establishment. It probably would prescribe the method by which depreciation would be determined and would indicate what items should be charged to current expenses and what to capital assets.

The vast amount of information which the Federal Trade Commission will be empowered to gather under the bill is to be furnished under the compulsion of a penalty clause, which provides a fine of $100 for each day the reports are delayed after they are due. The bill provides that the information is to be furnished so that the Federal Trade Commission may calculate separately the costs and profits on (a) the investment actually and currently used in the business, on (b) the investment in land and property held for future use and development and on (c) other investments not directly used in the business.

The commission also is authorized to investigate, whenever it sees fit, "the organization, business, conduct, practices and management" of all persons and corporations engaged in the coal industry. It is required from time to time to investigate and report as to all financial interrelations between owners, operators or dealers or any of them to the extent necessary to determine the full profits of owners, operators or dealers, and the existence of any combination or relationship which may tend to lessen competition or to create monopoly.

The reports and the information are to be "in such form as the commission may prescribe." The commission is to have the power to promulgate and to force all rules and regulations necessary to carry out the provisions of the act. In addition, authorized agents of the commission are to have "the right to copy any documentary evidence of any persons or corporations reporting or being investigated." The commission is authorized and directed to classify persons and corporations required to make reports and "to make reasonable exemptions from requirements to report." This, some hold, grants a power that would be subject to abuse and probably goes beyond any legislative right of classification.

While the bill provides that the identity of individual companies submitting the information is not to be disclosed ordinarily, the commission is empowered to make public full facts in regard to those who have charged unreasonable prices for coal. It is left entirely to the commission to determine what price is regarded as unreasonable. In addition, the commission may use its own judgment as to placing the information obtained under the act at the disposal of "any private or public board, state or federal department, agency, commission or other group engaged in the . . . settlement of any labor disputes" arising in mining operations."

Senator La Follette Submits a Report

In submitting the bill to the Senate, Senator La Follette made the following report:

"The Committee on Manufactures, to whom was referred the bill (S. 4828) 'to promote the general welfare by gathering information respecting the ownership, production, distribution, costs, sales, and profits in the coal industry and by publication of same, and to recognize and declare coal and its production and distribution charged with public interest and use, and for other purposes,' having considered the same, report favorably thereon with the recommendation that the bill receive early consideration, and do pass, with an amendment, at this session of the Congress, as a necessary, preliminary, and emergency measure.

"The committee does not offer this bill as a complete legislative solution to prevent the recurrence of the deplorable conditions to which the consuming public has been subjected, more especially during the past year. The problem is so vital to all the people and to the industries of the United States that comprehensive final legislation should only be attempted after more thorough and complete study of all the facts and factors.

"The committee believes that this bill takes a first and important step in providing for the immediate setting in motion of existing agencies of the government for the gathering and dissemination of full facts, without which proper, effective, and just legislation cannot safely be attempted.

"In our present state of society coal is one of the universal basic necessities, both to life and industry. To-day, by reason of distances and congestion, coal to move transportation and as the chief power generator in the manufacture or conversion of food, shelter, and clothing, as well as the common household heating fuel, has become almost if not quite the subbasic necessity, and therefore it must be recognized as vital to the public health and general welfare and charged in the highest degree with public interest and use.

"Because coal is such a universal public necessity to the health and very life of nearly all of the people of the United States, it follows inevitably that anything which seriously affects the coal supply, either in unreasonably raising the price thereof or in cutting off the actual supply in any portion, approaches a public calamity.

"The evidence taken by this committee and by the Senate's Special Committee on Reconstruction and Production proves

beyond dispute that during the past year there was both (*a*) a serious danger of absolute cutting off of supply in substantial portions of the country, and (*b*) unconscionable profiteering in price, with the resulting suffering that must follow. This situation began almost immediately upon the release of price control by the Federal Fuel Administration on April 1, 1920. It continued to grow more acute throughout the season until well into the winter, when various factors, including priority of right for the transportation of coal, and increased production, coupled with an unusually mild winter, replenished the coal supply and made stocks last longer, thus lessening somewhat the evil consequences that must otherwise have resulted.

"There is conflicting evidence and great divergence of opinion as to the cause of the shortage and disturbance of supply, but whatever are the facts as to the cause, the committee finds that no cause constituted either justification or legitimate excuse for the great advance in prices which occurred, most largely in the spot market, which the evidence clearly shows was participated in by operators, wholesalers, and retailers, aggravated by the entrance into this field of quick and easy profits of a horde of speculators, who have had no defenders before the committees.

"It is fair to say that not all operators, wholesalers or retailers increased their prices unduly; many operators, particularly of the larger class, had a large proportion under contract at prices prevailing prior to the termination of the Fuel Administration. However, when it is recalled that those least able to buy and the householders very generally are dependent on the spot market rather than on contract coal, it is at once apparent that those who could least afford it suffered most. The testimony shows that margins realized for the year 1920 generally were far above the margins of any previous year. There was an effort on the part of the operators and their representatives appearing before your committee to blame chiefly the small operators, or high-cost mines, for the excessive prices. The testimony before the committee, however, is uncontradicted that many concerns well above the average in size participated in such high prices and realizations.

Coal Industry Asserts Crisis Will Not Recur

"The representative of the coal industry opposed the bill referred to the committee, asserting that the crisis is past and that it will not recur. This contention was based largely on assertions of a claimed ability to produce under normal conditions more bituminous coal by a substantial tonnage than the country annually consumes. Such assertions are, however, qualified by two factors: First, that there always will be adequate transportation moving; and, second, that substantially full capacity of production can be relied on at all times.

"On the other hand, there is in the record testimony of high authority representing the coal industry that while the market for a few months will be favorable to coal buyers and consumers, the market for several years to come will be most favorable to coal producers and sellers.

"Whatever may be the opinion of coal operators and coal dealers, the suffering and sacrifice which the people have been compelled to endure demands that at least a beginning shall be made at the present session in dealing with this great problem.

"In the opinion of your committee it is the manifest duty of Congress at this time to enact legislation which will secure full publicity as to costs of coal production, distribution, and profits. The unfortunate experience of the past year has demonstrated beyond doubt that it is necessary that this data should be gathered by the Government for the information and protection of the public.

"As stated at the outset, it is the judgment of your committee that to completely and scientifically meet this problem requires further study of the entire situation and industry. There is, however, one branch of necessary, preliminary, and helpful legislation to which no serious objection has been or can properly be made. Legislation should be enacted at once providing for the acquisition and general dissemination by impartial Government agencies for the use of the public of complete information relating to the coal industry and trade. Such legislation is not only of a preliminary character to more complete legislation but at this time it also partakes of the nature of emergency legislation. This latter is true, because what is known as the "coal year" begins April 1, around which time contracting for coal supply generally occurs and wage readjustments are likewise entered into. Therefore, it is highly important that the gathering of facts and public dissemination thereof be begun at once, so that the public as well as those self-interested may have the facts.

"Heretofore, with some exceptions, the meager information which the Government has been able to furnish the public has been supplied by the coal trade. Such information is not required by law. It is purely voluntary. It follows without question that the coal trade will report nothing detrimental to its interest. Much information has been assembled by and retained only for the use and information of the trade itself. To what extent such information suppresses competition or advances prices cannot be determined, because of lack of full information. The buying public has been dependent upon whatever the industry has determined to make public. It seems axiomatic that the public as the buyer and consumer of coal is fairly entitled to at least equal information with those from whom it must buy.

"The bill as reported proposes broadly two things: (1) The formal declaration and enactment by Congress that coal is a basic necessity, essential to the public health, and therefore charged with a public interest and use. (2) It provides for the procurement, assembling, and doing this currently, when it is of value. It provides that this shall be done by existing governmental agencies under proper power to compel the furnishing of accurate statistics, with penalty for failure to furnish same or the furnishing of misleading or false statistics.

"The committee believes that no valid objection will or can be urged against these proposals and this bill, and recommends its speedy enactment."

Senator Reed Objects to Rushing Bill Through

The fact that the Manufactures Committee of the Senate passed on and reported the Calder coal regulation bill without a quorum of the members in attendance developed in a Senate debate provoked by Senator Reed, of Missouri, a member of the committee, who objected to hasty consideration of the measure, and announced his intention of thoroughly considering the bill. "The Senate will not gain time by this sort of proceeding," he asserted, declaring he had no notice of meetings of the committee. Senator Walsh, of Massachusetts, said he had not been present at any meeting of the committee leading up to the report of the bill, and Senator Fernald, of Maine, said he had supposed the full committee would get together on the measure. Senator Reed obtained consent of the Senate to submit a report to the Senate embodying his views on the bill.

During the debate Chairman La Follette admitted that repeated meetings of the committee were held on the bill without a quorum. Senator Reed in the discussion referred to "wild statements" that had been made in connection with the coal situation and asserted that "more misrepresentation had been made in regard to the coal situation than any other." He also declared the attorneys for the Calder committee were "all on one side of the case," and that the committee should study the bill in the light of the testimony that had been adduced. He answered the argument of Senator La Follette that hasty action was necessary in order to start the statistics on coal with the beginning of the new coal year, April 1, by saying that wage agreements did not expire until April, 1922, and that consumers made their contracts in the light of their own judgment and not according to figures which might be produced.

Senator Reed indicated his line of attack on the bill when he said the first section of the measure put the coal business in the same class as railroads as regards public interest, which would provoke discussion. Answering a statement that he had taken up time of the committee, Senator Reed said that he had never asked questions with so much satisfaction as he did on this bill, when the "real viewpoint of some gentlemen who appeared as experts was disclosed."

"We shall have to take enough time to find out what is in the bowels of this measure before we get through with it," declared the Missouri Senator.

Grand Jury Indicts 226 Indiana Mining Companies and Miners, Charging Conspiracy and Monopoly

SPECIAL CORRESPONDENCE

AFTER having examined scores of witnesses, the Federal Grand Jury in Indianapolis Feb. 25 returned an indictment in five counts against 226 bituminous coal operators, coal operators' associations, coal-mining companies and coal miners, charging conspiracy to violate the Sherman Anti-Trust law. All the defendants except twelve are already under indictment on charges of conspiracy to violate the Lever Act. One of the corporations indicted is the National Coal Association, and John J. Lewis, president United Mine Workers, and William Green, secretary-treasurer, have again been named.

The indictment charges in the first count, restraint of trade; in the second, restraint of commerce; in the third, restraint of trade and commerce; in the fourth, conspiracy to monopolize, and in the fifth, monopolizing. The case is drawn solely under the Sherman Anti-Trust law and is a separate case entirely from the one now pending against 125 operators and miners charged with violation of the Lever Act. The indictment covers the last three years and goes into a detailed history of the bituminous coal industry and of the methods by which, it is charged, the operators and miners have worked together to restrict the production and distribution of bituminous coal.

The charge is made that at various joint conferences held in the last ten years it was agreed that the miners and operators were partners in mining, producing and distributing coal, and that they would aid one another in plans to increase wages, increase prices, to create a shortage and to otherwise limit production and distribution. It is charged that the agreements entered into between the miners and operators provided that coal should not be sold at any time for a price that did not yield a profit to the operator; that increases of wages to miners should be added to the price of coal; that competition among the operators should be eliminated; that no coal should be sold below cost of production and that the means of increasing cost and production in the price of coal should be by closing and keeping idle the coal mines.

CHARGES COLLUSION BETWEEN OPERATORS AND MINERS

It is further charged that the operators established a uniform cost accounting system for the operation of the mines, and that by agreement a greater number of miners were employed than were reasonably necessary properly to operate the mines. It is averred that the agreements entered into at the conferences between the miners and operators have been continuous from one conference to another up to the filing of the indictment.

The indictment goes into detail regarding the joint conference at Washington, Sept. 25, 1917, at which time, it is averred, the wages of miners were increased 10c. a ton and the wages of day operators also were advanced.

It is pointed out that the Washington agreement was ratified in September, 1919, at Cleveland. It is charged that John L. Lewis, president of the United Mine Workers of America, at that meeting recommended that the Washington wage agreement be terminated by November, 1919, and that unless another agreement was made a strike be called. It is charged that in accordance with this recommendation a strike order was issued by Lewis and other officers of the United Mine Workers of America on Oct. 15, 1919.

The indictment charges that following the suspension of the national fuel regulations in February, 1919, the operators agreed not to contract for the future delivery of coal and not to sell coal unless they were able to obtain a price equal to or above the price that had been fixed by the U. S. Fuel Administration.

It is charged that they thereby "created high and fictitious market prices." It is also charged that "by concerted plan and policy they made various reports to the mine bureaus of the several states and to the government that there was no market for coal; that this plan caused the price to be increased until it was higher than the prices fixed and maintained by the national Fuel Administration prior to its suspension."

The charge is made that the National Coal Association is engaged in marking out zones and territorial limits into which coal may be shipped. It is said that reports are made on the production and the kind of coal and the price pertaining to each zone is distributed to the operators through the various coal trade bureaus and associations, in order that the operators may act in concert in governing the supply and price of coal.

Operators are charged with promoting strikes among miners through failing to collect penalties supposed to be assessed against miners who engaged in strikes not authorized by the miners' union. It is averred that the defendant operators have refused to demand these penalties and have thereby encouraged frequent strikes. It is charged also that they have violated agreements setting forth that mines should remain in operation pending disputes with the miners.

The indictment goes into detail as to methods said to have been employed by operators to avoid delivery of coal on contract. It is averred that uniform contracts were made by all operators and that these contracts were made subject to increase according as the wages of miners were increased and without reference to the actual cost of production, even though an increase of contract price was not necessary to meet the cost of production plus a just and reasonable profit.

ALLEGED TO HAVE RESTRICTED PRODUCTION

The indictment charges that in the plan to restrict production and distribution and to increase the price of coal, the operators refused to sell coal to any one who was not a member of the Retail Coal Dealers' Association and allied organizations, and they refused to sell coal to anyone for purposes beyond his own immediate needs, thus preventing storage of coal for future use. It is charged that the operators also refused to ship coal direct to consumers wherever local coal dealers objected to such shipment. The charge also is made that the operators, acting together, planned that mines should be idle at various times during each year in order that the price of coal might be increased.

One of the plans for increasing the price of coal, it is charged, was to sell it through sales agencies, which were separate in name only from the operating and producing companies. By pretending to sell through such supposedly separate organizations, it is charged, the operators increased their profits. The charge also is made that the operators created the so-called "spot" market by agreeing to sell coal only for immediate delivery at prices agreed on at the time of delivery. In the carrying out of their plan to cause a scarcity of available coal, the operators, it is charged, published broadcast in 1920 articles pointing out that there was a shortage of coal, and urged the people to purchase.

The indictment names and identifies the defendants as having been engaged during the three years covered by the indictment in the mining, production, purchasing, selling, distribution or transportation of bituminous coal. It is averred that certain of the said defendants were engaged in two or more of these occupations, and that certain of them were officers and agents of various named organizations, including coal companies, coal trade bureaus, coal trade associations and other similar concerns. Many of the associations are not made defendants for the reason that they are unincorporated societies or partnerships incapable of being sued or prosecuted as such. Others of the defendants are identified as having been during the three-year period officers and members actively engaged in the management of the United Mine Workers of America and local unions and

district boards, committees, wage-scale committees and joint conferences of miners and operators.

All the defendants, it is averred, were engaged during the three years in the pursuit of their various occupations, and in their several dealings with each other and with the public in general, save and except as all conspired to restrain interstate trade and commerce in bituminous coal. It is pointed out that the operators owning and engaged in the production of bituminous coal, own and are now able to produce sufficient coal each year to supply all the needs and demands of the various users and consumers of bituminous coal in the United States.

After naming the National Coal Association and various voluntary, unincorporated organizations of coal operators, such as the coal trade bureaus and coal operators' association, as being supported, maintained and used by the coal operators for their use and benefit in the conduct of their business, and after detailing the organization of retail coal dealers' associations which, it is averred, co-operated with and assisted the coal operators' association and bureaus in the conduct of their business with retail dealers, the indictment recites how as a general plan of co-operation the operators named what was known as scale committees to meet in joint conferences with similar committees composed of coal miners.

The indictment says that of approximately 600,000 miners and mine workers engaged in the mining of bituminous coal in the United States, about 400,000 are members of the miners' union. This organization, it is averred, is now a voluntary, unincorporated organization. It is recited that the assessments paid by the miners to the local unions and distributed to other divisions of the national organization amounted during the three years to approximately $2,000,000. This money, it is averred, was disbursed on account of the expense of sickness and death and for other purposes, including that of "supporting and maintaining said miners while they were abstaining from and refusing to work in the mines by reason of strikes and for the further purpose of organizing, promoting and maintaining strikes among said miners, extending their organization and promoting so-called sympathetic strikes."

The indictment recites how wage-scale agreements were reached at conferences between the scale committees representing the operators and the miners. It is pointed out that during the time covered by the indictment the initiation fees, dues, assessments and fines levied by the union against the miners were "checked off, withheld and collected from and out of said wages of said miners by the coal operators, owning and operating the various mines where said miners worked and earned wages."

It is charged that statements of the assessments so checked off and collected were approved by representatives of both the miners and the operators, and that the money so collected was paid to the officials of the union.

How Taxpayer May Protect Himself if Tax On Realty Sales Is Unconstitutional

By Harry Lefker*

ON DEC. 16, 1920, a decision of far-reaching importance was handed down by the U. S. District Court in the matter of Brewster vs. Walsh. In this suit the plaintiff first invokes the Sixteenth Amendment of the Constitution, which provides: "The Congress shall have power to lay and collect taxes *on incomes* from whatever source derived."

With the amendment as a basis, the plaintiff contends that the section of the income tax statute which specifically imposes a tax upon net income which "shall include gains, profits, and income derived from . . . sales or dealings *in property* is unconstitutional in so far as it taxes as income the increased value of investments when realized by sale, and that such a tax is a direct tax upon capital or property not authorized by the Sixteenth Amendment and not a tax upon income. In other words, that such gains do not come within the definition of income as the word is used in the Sixteenth Amendment.

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The Court in an opinion signed by U. S. District Judge Thomas, entered judgment for the plaintiff.

It remains now for the U. S. Supreme Court to adjudicate the principles involved in the above case. The question whether profits upon the sales of capital assets are income will be definitely and permanently settled within the near future. It does not appear, however, that decision will be made before the returns are due to be filed. Under these circumstances the taxpayer may follow one of two methods in order that his rights may not be prejudiced if the decision should prove to be favorable to the interests of taxpayers:

(1) He may report and file under protest any profits derived from sales or dealings in property, such protest to set forth in detail the reasons for believing that the tax on such profits is unconstitutional. This would enable the taxpayer to file a suit at some future date.

(2) He may exclude such profits from his return and attach a statement which will show the detail of the profits so excluded as well as a definite explanation for the exclusion. This procedure will protect the taxpayer from a penalty for negligence.

There is little doubt on the part of the intelligent observer that income taxes are becoming more onerous with each succeeding year. Discussion and speculation is rife today as to whether the tax laws will be modified. The question has assumed larger proportions since the recent repeal of excess profits taxes by Great Britain.

The 1920 depression threatens to deprive our government of 50 per cent or more of its expected revenue. Meanwhile the expenses of government must be met, the interest on Liberty and Victory Bonds is a fixed charge that must be provided for, and these same bonds must be amortized and funded each year so that the obligation may be liquidated at maturity.

All of which point to a stricter application of the tax laws rather than a modification thereof.

U.S. Supreme Court Declares Profiteering Clause of Lever Act Void

DECLARING invalid the "profiteering" and "hoarding" sections of the Lever Food Control Act, the U. S. Supreme Court in an opinion delivered Monday, Feb. 28, nullified at one stroke virtually every effect of the nation-wide anti-profiteering campaign conducted in 1918-1919 by Attorney General Palmer.

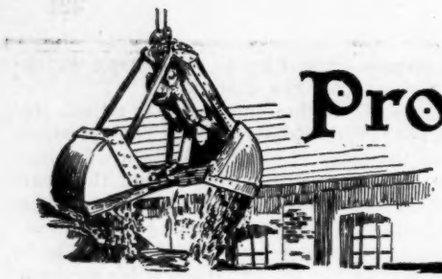
The opinion of the Court was unanimous. Justices Brandeis and Pitney, who failed to sign it, explained that they subscribed to the findings, but dissented "from the reasoning" by which they were reached.

Ten cases involving the Lever Act were consolidated before the court, but that of the L. Cohen Grocery Co. of St. Louis was taken as the "key case." Here the government appeared as appellant from a decree of Federal District Courts in Missouri sustaining a demurrer to the indictment of officials of the company on charges growing out of the sale of fifty pounds of sugar for $10.07, or slightly more than 20c, a pound. The Supreme Court affirmed the decision of the courts below and relieved the grocery company from further prosecution.

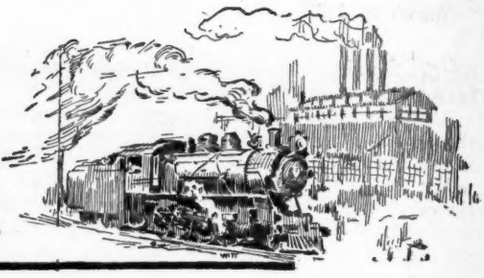
Hundreds of other cases, inaugurated in courts throughout the country as a result of the Palmer campaign, either already certified to the Supreme Court or progressing in the Appellate division, were cleared from the judicial slates by the decision. In all, there are about 2,500 cases in various stages that are nullified by the decision.

The declaration of the court that vital sections of the statute were unconstitutional were based solely and flatly on their construction, it appeared from the opinion which was read by Chief Justice White. Failure of the lawmakers to provide any "specific or definite act" was declared to bring their work under the inhibition of the fifth and sixth amendments.

In an opinion by Justice McKenna, the Court sustained the Indiana law making mandatory the application to coal-mining companies in that state of the workmen's compensation law. A coal company had appealed the constitutionality of the law on the ground that it was mandatory as to only one industry, coal. The lumber price information case was ordered re-argued.



Production and the Market



Weekly Review

SLIGHT upward tendencies in the spot coal market are recorded this week, brought about by two unrelated causes. In the Middle West a previously good demand for prepared sizes of bituminous coal had been responsible for the output of larger tonnages of screenings than industrials required, and prices of fine coals were depressed from oversupply. Within the past ten days and just prior to the recent cold wave the retail trade largely withdrew from the market, being well supplied with prepared sizes. This resulted in many mines which had been shipping prepared coal closing down, which also curtailed the output of screenings. The demand for industrial steam coal was thereby reversed and prices took an upward turn. Following this the cold wave reacted on the householder and prices of prepared sizes advanced. Further curtailment of mine operation will follow after this temporary demand is over.

In the Chicago spot market smokeless coal has advanced as a result of a general clean-up of supplies previously forwarded in anticipation of sales. West of Chicago production is at low levels, demand for coal from Kansas being measured by meager household requirements, and in Colorado the market at this time of the year, mainly from retail dealers, is soft.

Conditions in the markets reached by Kentucky coals are essentially identical to those described for Chicago, "no market" being the ruling cause of extreme curtailment of production. Ohio, both north and south, is generally down, the only hope ahead appearing to be early opening of the Lake season.

General uncertainty prevails in the Pittsburgh field, with no immediate prospect of settlement of alleged inequalities in freight rates to lower Lake ports resulting from the last general rate advance. Shippers are holding back in commitments for the Lake season. Efforts of independent steel intersts to open the market for their products by sharp price cuts are being watched by the trade in the hope that new life may be put into the demand for coal.

Whereas a few weeks ago the Tidewater yards were well filled with unsold coal and shippers were taking chances with the Tidewater market, today little coal is either mined or shipped to the Atlantic ports that has not been sold. The result is reported to be a general clean-up of unsold coal and little "distress" coal on hand. Aside from old contract business, no coal is moving into New England, where such consumers as are operating are cutting into reserves accumulated last year.

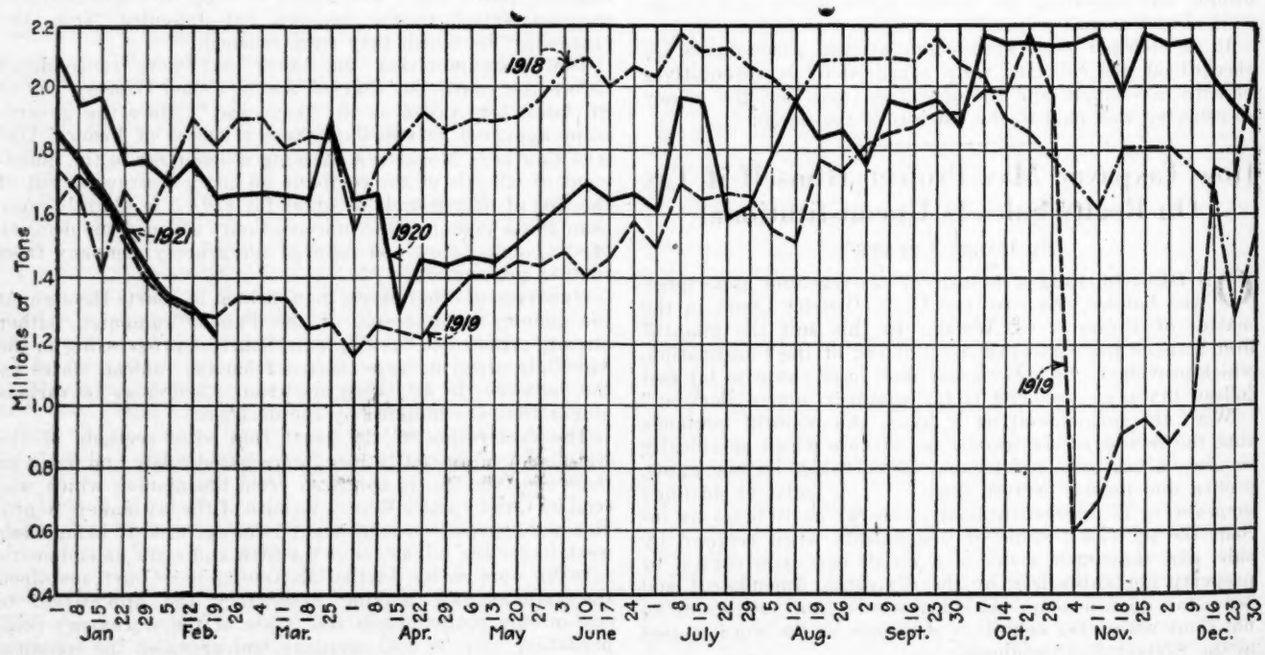
Some operators are persisting in forcing contract coal on wholesalers who have no coal sales contracts. The inevitable result is a depression on the market, for the coal must be sold at low figures.

Coal Age Index Indicates Spot Market Advance

These developments have caused the spot market to advance from what may prove to be the low point, as the *Coal Age* index of spot bituminous prices rose to 101 from 98 in the last week of February, as compared with a drop of one point from 99 to 98 in the preceding week.

Demand for anthracite domestic coals is declining rapidly. Last week's inclement weather had no bolstering effect on the market and independent coal touched the lowest level it has experienced during the coal year. The steam market grows steadily worse. Companies with storage yards are able to take care of their surplus, but the individuals are in sore straits. In regard to spring reductions, it is a foregone

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

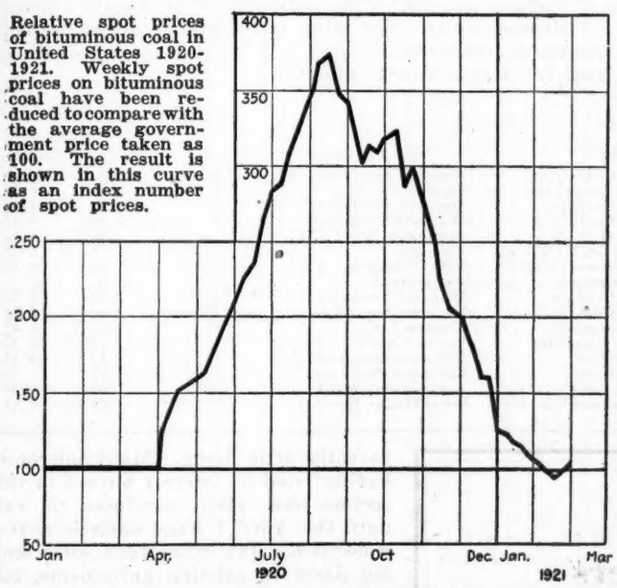
conclusion that there must be a cut in steam prices, for with bituminous at its present level, buckwheat at company price of $4.25 is simply being pushed off the market. Some observers consider it not unlikely that with a cut on steam, the family sizes will have to carry the burden of production cost, and to accomplish this the large producers will not make spring reductions.

Slowing down of activity at the coking plants of the furnace interests was marked last week. There is no change in the attitude of Connellsville producers. Plant owners have no disposition to make more coke than can be sold promptly at a fair margin, and simply intend to bide their time, which they have every confidence will come in due course.

BITUMINOUS

"No market" again cut the production of soft coal during the week ended Feb 19, when the output fell below the level of 1919 production for the first time since last December. The total production was estimated by the Geological Survey at 7,472,000 net tons, a decline, when compared with the preceding week, of 5 per cent, or 395,000 tons. As stated before, lack of demand is causing additional curtailment of mine operations and production during the last week of February registered a further downward trend. Of course Feb. 22, Washington's Birthday, caused some holiday losses, but "no market" losses over the country as a whole were close to 50 per cent of capacity.

Relative spot prices of bituminous coal in United States 1920-1921. Weekly spot prices on bituminous coal have been reduced to compare with the average government price taken as 100. The result is shown in this curve as an index number of spot prices.



Coal Age INDEX OF SPOT BITUMINOUS PRICES ADVANCED FROM 98 FOR THE WEEK ENDED FEB. 22 TO 101 DURING THE LAST WEEK IN FEBRUARY

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total bituminous, including coal coked

	1921 Week	1921 Coal Year to Date	1920 Week	1920 Coal Year to Date
Feb. 5[b]	8,132,000	467,825,000	10,010,000	407,480,000
Daily average	1,355,000	1,790,000	1,668,000	1,553,000
Feb. 12[b]	7,867,000	475,692,000	10,484,000	417,964,000
Daily average	1,311,000	1,779,000	1,747,000	1,557,000
Feb. 19[c]	7,472,000	483,163,000	9,513,000	427,477,000
Daily average	1,245,000	1,768,000	1,585,000	1,558,000

(*a*) Less 2 days' production during first week in April, to equalize number of working days covered for the two years. (*b*) Revised since last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Coal Year to Date	1920 (*a*) Week	1920 (*a*) Coal Year to Date
Feb. 5	1,985,000	77,617,000	1,451,000	78,960,000
Feb. 12	2,048,000	79,665,000	1,822,000	80,782,000
Feb. 19	2,010,000	81,675,000	1,504,000	82,286,000

(*a*) Less 2 days' production during first week in April, to equalize number of working days covered for the two years.

BEEHIVE COKE

Week Ended Feb. 19*a* 1921	Feb. 12*b* 1921	Feb. 21 1920	1921 to Date	1920(*c*) to Date
219,000	228,000	426,000	1,724,000	3,275,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Car and labor supply at present are ample. The Kansas disturbance was of short duration and miners are again working to the limit of a sluggish market. The Alabama strike has finally been called off, although this will have no effect of production in that field, as for some time it has been easily possible to produce more coal than could readily be sold.

Weekly production in the northern and middle Appalachians registered a further decline to 4,440,000 net tons in the period ended Feb. 12. This is a decline of some 200,000 tons as compared with the preceding week and less than the corresponding week in any of the past five years.

TIDEWATER

Coal continues a drug on the market, with only 200,000 gross tons dumped at Hampton Roads during the week ended Feb. 19. High-volatile coal ranges $5@$6 per ton, with low-volatiles approximately $1 higher. Baltimore reports the situation as rather uninteresting. For the first twenty-four days of February only fifteen ships were loaded

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Coal	Market Quoted	Gov't Price	Jan. 27 1921	Feb. 22 1921	Feb. 29 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$4.00	$3.50	$3.50
Pocahontas lump	Columbus	2.60	5.85	6.00	*5.75*
Pocahontas mine run	Chicago	2.35	3.25	3.00	**3.50@4.00**
Pocahontas lump	Chicago	2.60	4.50	3.90	**4.50@6.00**
Pocahontas mine run	Boston*	....	6.90	6.00	*6.60@6.00*
Pool 1	New York	2.35	3.75	3.40	**3.35@3.75**
Pool 1	Philadelphia	2.35	4.00	3.20	**3.50@3.60**
Pool 1	Baltimore	2.35	4.00	3.15	3.15
Clearfields mine run	Boston	2.95	2.85	2.60	2.15@3.00
Somersets mine run	Boston	2.95	3.60	3.15	2.50@3.75
Pools 10, 11	New York	2.95	2.65	2.85	*2.50*
Pools 10, 11	Baltimore	2.95	....	2.50	*2.25@2.50*
Pools 10, 11	Philadelphia	2.95	2.65	2.45	**2.25@2.75**
Pool 18	New York	2.95	2.25	2.00	.....
Pool 18	Philadelphia	2.95	2.20	....	2.00
Pool 18	Baltimore	2.95	2.25	2.10	.....
High-Volatile, Eastern					
Pittsburgh mine run	Pittsburgh	2.35	2.50	2.35	**2.25@2.50**
Pittsburgh sc'd. gas	Pittsburgh	2.35	3.25	2.70	**2.75@3.00**
Kanawha mine run	Columbus	2.70	2.75	2.60	*2.50*
Kanawha lump	Columbus	2.95	4.85	3.50	**3.75**
Hocking mine run	Columbus	2.50	2.50	2.25	2.25
Hocking lump	Columbus	2.75	4.00	3.65	*3.50*
Pitts. No. 8 mine run	Cleveland	2.35	2.75	2.40	2.25@2.50
Pitts. No. 8 lump	Cleveland	$2.60	$4.15	$3.85	*$3.50@4.00*
Pool 34 (54, 64)	Philadelphia	2.50	2.25	2.25	2.25
Pool 34 (54, 64)	New York	2.50	2.25	2.15	**2.15@2.40**
Pool 34 (54, 64)	Baltimore	2.50	2.20	2.10	**2.15**
Midwest					
Franklin, Ill., mine run	Chicago	2.35	2.75	2.75	2.25@3.25
Franklin, Ill., lump	Chicago	2.55	3.80	3.80	3.50@4.15
Central Ill., mine run	Chicago	2.35	2.25	1.85	1.50@2.25
Central Ill., lump	Chicago	2.55	3.25	2.60	2.00@3.25
Ind. 4th Vein, mine run	Chicago	2.35	2.50	2.20	**2.50@2.75**
Ind. 4th Vein, lump	Chicago	2.55	3.60	3.30	2.50@4.15
Ind. 5th Vein, mine run	Chicago	2.35	2.45	2.15	**2.00@2.75**
Ind. 5th Vein, lump	Chicago	2.55	3.55	3.10	2.40@3.75
Standard mine run	St. Louis	2.35	2.00	1.95	1.90@2.00
Standard lump	St. Louis	2.55	2.50	2.60	2.50@2.75
West Ky., mine run	Louisville	2.35	2.35	2.15	**2.00@2.50**
West Ky., lump	Louisville	2.60	4.00	3.25	*2.75@3.50*
South					
Big Seam mine run	Birmingham	2.45	3.25	3.10	*2.90@3.25*
Big Seam lump	Birmingham	2.75	....	3.25	3.50@4.00
S. E. Ky. mine run	Louisville	3.00	2.80	2.75	2.50@3.00
S. E. Ky. lump	Louisville	3.25	5.25	4.00	3.75@4.25

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

on export account. Although water rates to New England are going begging the movement continues rather light, tonnage moved being almost entirely confined to contract.

All-rail movement to New England totaled 3,377 cars in the week ended Feb. 19. This was but 13 cars less than during the preceding week, although well ahead of the corresponding week in either 1919 or 1920.

ANTHRACITE

Hard-coal mines continued to work close to capacity. Shipments during the week ended Feb. 19 were reported by the Geological Survey at 2,010,000 net tons, or within 38,000 tons of the output for the preceding week. Cumulative production for the present coal year has reached 81,675,000 tons, or two-thirds of a million tons less than the corresponding period of the preceding coal year. Heavy shipments have broken the independent market for domestic coals and these prices now range on a par with company schedules. Steam sizes are a drug on the market and price concessions are necessary to move any tonnage.

COKE

Beehive coke production continued to reflect the lack of demand during the week ended Feb. 19. The output was estimated at 219,000 net tons, or a decrease of 9,000 tons when compared with the week ended Feb. 12. Cumulative production for 1921 now stands at 1,724,000 net tons, or but little more than half of that during the same period of last year.

Lower Prices Bid for Shipping Board Coal

FOR the third time the Shipping Board, on Feb. 28, opened bids for bunker coal at Atlantic Ports and the Virgin Islands. The second bids were opened on Jan. 14, 1921, and one award, to Dexter & Carpenter, Inc., for 300,000 tons, was all that has been made so far.

The bids opened this week were in nearly every instance lower than those submitted in January. In all, sixty-seven companies submitted bids of which thirty-eight were companies not included among those submitting bids in January. An indication of the lower prices offered at Hampton Roads is shown by the bids of the C. & O. Coal & Coke Co. which revised a bid from $9 down to $7.25, the Lake & Export Coal Corp., from $8.25 to $7.10; Central Pocahontas Coal Co., from $7.80 to $7.65, and W. C. Atwater & Co., from $8 to $7.35. There were a few upward revisions as that of the Maryland Coal & Coke Co., for delivery at Philadelphia, from $6.88 to $7.25.

Massachusetts Institutions Accept Bids of From $7.75 to $9.44 for Coal

AWARDS were made on Feb. 24 for 44,780 net tons of coal on bids submitted Feb. 18 for hospitals and other institutions, account of the Department of Mental Diseases of Massachusetts. The mine and delivered prices are both shown in the accompanying list of successful bidders on coal for Massachusetts hospitals:

Institution	Net Tons	Bidder	Mine or Mines	Vein	Price f.o.b. Mines	Price Delivered
Danvers State Hospital	4,100	Imperial Coal Co.	Diamond Smokeless	"B"	$2.89	$8.17
Foxboro State Hospital	1,730	Dexter & Carpenter	Peerless No. 1	"E"	2.99	8.27
Gardner State Colony	1,775	Imperial Coal Co.	Diamond Smokeless	"B"	2.89	8.31
Grafton State Hospital	3,000	Imperial Coal Co.	Diamond Smokeless	"B"	2.89	8.03
Medfield State Hospital	4,000	Imperial Coal Co.	Smokeless, Nos 1 ("B") and 2 ("B")		2.78	8.06
Northampton State Hospital	2,460	Carbon Coal & Coke Co.	Cymbria	"D"	3.18	8.32
Taunton State Hospital	2,350	E. B. Townsend Coal Co	Loyal Hanna No. 3	"B"	3.05	8.19
Westborough State Hospital	6,500	John Tredennick	Knickerbocker	"B"	3.20	...
Monson State Hospital	2,000	Imperial Coal Co.	Diamond Smokeless	"B"	2.89	7.75
Massachusetts School for Feeble Minded, Waverly, Mass.	2,500	Imperial Coal Co.	Diamond Smokeless	"B"	2.89	8.17
Massachusetts School for Feeble Minded, Gardner, Mass.	90	John Tredennick	Shaft and No. 7	"B"	3.00	8.42
Wrentham State School	1,900	Dexter & Carpenter	Peerless No. 1	"E"	2.99	8.27
Boston Psychopathic Hospital	800	City Fuel Co.	Knickerbocker 3 and 2	"B"	3.25	9.37
Boston State Hospital	7,000	City Fuel Co.	Knickerbocker 3 and 2	"B"	3.25	9.37
Worcester State Hospital (Bloomingdale)	5,000	Claflin-Sumner Coal Co	Loyal Hanna No. 3	"B"	3.08	9.44
Worcester State Hospital (Summer Street)	580	Claflin-Sumner Coal Co.	Loyal Hanna No. 3	"B"	3.08	9.44

Reports From the Market Centers

New England

BOSTON

Market Very Quiet—Contract Situation Marking Time—Hampton Roads Accumulation Absorbed—Prices Remain Easy—Anthracite Shippers Look for Orders.

Bituminous—Steam coal trade is virtually at a standstill. There is spot buying in scattered instances, but the aggregate tonnage is small, and there is only slight interest in quotations. Current prices are settling into grooves, more and more shippers being willing to consider a range that they would not have looked at a few weeks ago. If reserves were not at so high a level there would certainly be some buying at competitive figures, but consumers who have coal on hand that will last them through August and also have contract fuel still due them are in no position to enter the spot market. A very quiet March is looked for.

The proposals submitted on Feb. 18 to supply certain Massachusetts state hospitals were of much interest to the trade. In each case where there were alternate bids for coals of higher grade the commission awarded contracts to those offering the lower priced fuel. On "B," "D," and "E" vein coals from central Pennsylvania and from Somerset County the range was $2.89@$3.18 per gross ton f.o.b. mines. No award was made on Pocahontas or New River, or in fact on any coal by water. This discloses the fact that even at present rates, all-rail as compared with those by water for inland points, the advantage at current prices still rests with the rail shippers.

In the contract situation there is apparently little doing. Many operators having tried to interest buyers in this section have about concluded to wait until the April 1 wage basis is nearer a decision. There has been some scaling down on existing agreements, but this is by no means general and is still confined to a very few large distributors.

In order to avoid expensive accumulation at the Tidewater piers production has had to be held down. This is shown by the very largely decreased offerings of "distress" coal at the terminals and afloat. On the other hand, there is no hardening of prices.

The excessive tonnages available at Hampton Roads a month ago have now been cut down to reasonable limits. The smokeless districts are also curtailing and much less is heard of forced sales. Prices continue on an easy basis, because both the Western and offshore markets are extremely dull. There is an entire lack of inquiry from Europe, at least in the open market, while from South American ports there is only a mild interest in the current market. Quotations are shown in the Weekly Review.

Anthracite—On all sides there has

been a most pronounced easing up on domestic sizes. Steam sizes faded away completely months ago, and pea and chestnut, at least, bid fair to follow suit. Egg and stove are about the only sizes at all in demand, and these only for small tonnages to care for trade the balance of the winter season. Such business is being gradually narrowed down to those in position to sell at "company" figures; the "independents" are hard put to it to secure orders at any basis materially over the old-line circular. Retail trade is extremely quiet.

Tidewater—East

HAMPTON ROADS

No Improvement in Demand—Loadings Decline—Prices Soften—Not Many Clearances.

Coal continues a drug on the market, with only 200,000 tons dumped during the week ended Feb. 19 and with a decrease in the accumulations at Tide. The price of high-volatile coal ranges $5@$6 per ton, with low-volatile as approximately $1 higher.

The belief exists here that new contracts, both for present needs and for the next fall and winter supply, will give much stimulus to the trade. It is believed the price will also be stronger, since the present level is below the figure at which operators are willing to turn the coal out of the mines.

Norfolk & Western officials report the largest number of empty coal cars in the history of the road now standing on their tracks, with indications from the coal fields "far from encouraging."

Only eleven cargoes of coal have cleared from this port during the last week, no French cargoes being included in this number. Clearings were:

Ital. SS. Leonita, for Gibraltar, 4,078 tons; Jap. SS. Kinkasan Maru, for Gibraltar, 6,345 tons; Am. SS. Ancon, for Cristobal, 10,100 tons; Am. SS. Cristobal, for Cristobal, 9,636 tons; Ital. SS. Piave, for Dakar, 6,514 tons; Ital. Bark Mortara, for Genoa, 2,521 tons; Dan. SS. Erik II, for Kingston, 2,673 tons; Am. SS. Dakotan, for Alexandria, 7,520 tons; Br. SS. Ronalee, for Amsterdam, 4,501 tons; Swed. SS. Gothia, for Cienfuegos, 2,700 tons.

NEW YORK

Independents Sell at Company Circular—Steam Prices Easy—Bituminous Market Quiet — Prices Slightly Stronger.

Anthracite—Demand for the domestic coals is on the toboggan. Last week's snow storm had no effect upon the market except to interfere with retail deliveries. Company coals are coming forward in sufficient quantities to take care of immediate needs with the result that there is less buying of independent coals at anything like premium prices.

There were some quotations as high as $9 last week but as low as $8.50 for stove and $8.25 for chestnut were heard. It was also said that some grades of independent coals were being quoted at company prices.

Retail dealers are not anxious to have much tonnage on hand on April 1 unless they are assured there is to be no spring reduction. With the retail prices remaining where they are now it is not likely that consumers can be induced to place orders early for next winter's supply.

Pea coal is no more active than the larger sizes and good grades of independent coals were quoted as low as $6, f.o.b. mine. The cheapness of bituminous together with the lack of demand, is having its effect upon the steam coal situation. The market for these coals is practically nil. Some of the companies are storing these sizes. Good grades of buckwheat were quoted around $3, although as high as $3.50 was reported for the better grades. Rice quotations ranged $2@$3, and barley 75c.@$1.25.

Bituminous—Demand shows no material increase but quotations indicate a stiffer market. Operators continue to withhold heavy shipments unless they have a market for the coal upon its arrival at destination.

The making of contracts has not yet gotten into full swing and no activity is expected until the middle of March. Buyers have not shown any enthusiasm along this line and producers are not anxious to tie up tonnage for the next year at anything like present market prices. There has not been any change in the attitude of various shippers to make contracts at much less than $4.25.

Boat owners complain of slow business. There are many idle boats and comparatively few loaded bottoms. The bunkering situation is slow, more than 200 vessels of all descriptions being tied up in this harbor one day last week, many of them waiting for cargoes.

South Amboy reported one day during the last of the week as having on hand 273 cars of Pool 9, and 135 cars of Pool 10, while at Pier 18 the same day, the reports showed 94 cars of Pool 10, 75 cars of Pool 11, and 80 cars of Pool 9.

Quotations for some of the pools, f.o.b. this Tidewater ranged about as follows: Pool 9, $6@$6.15; Pool 10, $5.80@$5.90; Pools 1 and 71, $6.15@$6.25, and Pool 11, $5@$5.25. Mine quotations will be found in the Weekly Review.

BALTIMORE

Storms Have Brief Bolstering Effect—Export Movement Light—Piers Idle Some Days—Small Spurt in Hard Coal.

Bituminous—The soft coal market here received a brief boost in the price-quotation line from a couple of snow storms and some snappy weather. The spurt brought some quotations for consumers in a hurry for fuel around $3.50 for best steam coals, and ended also for a brief time some too active competition in selling of high grade coals that had brought them in many sales 50c. below the recognized market level.

At present high-grade coals are procurable around $2.75@$3 as a general thing, while active competitors in the market are in some cases again selling Pool 9 coal, for instance, down to $2.50 and possibly even a bit less at times. This means that the poorer coals are almost forced out of the trading, as consumers are not even allowing shipment by pools but are demanding specific mine products. The trade realizes that all in it are not blameless, as some consumers in the past have undoubtedly gotten poor coal at times through substitution on a "Pool order."

The situation at Tide remains rather uninteresting, and at times the piers do not even work. For the first twenty-four days of February fifteen ships were loaded here on export account, with a total of 68,874 tons cargo and 8,780 tons bunker.

Anthracite—A spurt has come to the hard coal trading—small but none the less acceptable. Several dealers reported a fair late business in small lots. It would seem that a number of consumers who received but part of their orders early in the year, or spread over January when a good rush of coal came from the mines, have been hoping to skate through without filling out the full amount. The colder weather evidently caused some anxious inventories of cellar bins with the result that a number of small orders were placed to cover up. Receipts are light but plenty of reserve in most cases to make all needed deliveries.

PHILADELPHIA

Anthracite Breaks — Snow Storm Braces Retail Trade—Steam Sizes in bad Condition—Bituminous Remains Quiet—Prices Firm—Little Activity in Coke.

Anthracite—Big changes have taken place in the anthracite situation recently. For a couple of weeks the shipping houses were cognizant of a softening in the demand for pea coal. Now this has begun to spread to the other sizes. The individuals who have had the lowest prices all along on prepared coal have not as yet cut their figures, but the highest priced shippers have come down precipitately. One concern in particular has now dropped to $8.25 for egg, stove and nut, which is quite close to company figure of $8@$8.10. Company price of $6.40 on pea coal is frequently heard. We have also heard of sales of prepared coal on certain grades of ordinary anthracite at $7.95. Some shippers are endeavoring to move pea by quoting under $6.40, if a car of stove or nut is taken around $8.75.

The big snow storm the past week stirred up the retail trade just at a time when many yards had laid off help on account of the slowness. Due to the change in weather all yards have been active, although ordering from the consumers was confined to their barest needs.

In reference to spring price reductions, it is well to recall that the

miners' wage agreement has over a year to run and on account of this it is difficult to see just how the companies will be able to reduce their figures on family coal. It is a foregone conclusion that they will have to cut the price on steam, for with soft coal at $3 and under, buckwheat at company price of $4.25 is simply being pushed off the market. It has been intimated that with a cut on the steam sizes the companies will feel that the family sizes will have to carry the burden of production cost.

The steam trade grows steadily worse. The companies with their storage yards are able to take care of their surplus, but the individuals are in sore straits. A figure of $2.75 continues to be frequent on buckwheat, with the other sizes in proportion.

Bituminous—The movement is close to the minimum, the only favorable feature being that prices hold firm. Some shippers actually report a slight betterment in sales and this is probably traceable to some consumers awakening to the fact that the bottom has now been reached in prices. Recent quotations are shown in the Weekly Review.

Contract trade is practically at a standstill. Most manufacturing interests are waiting to see just how business conditions are going to be in the spring and are satisfied to buy at market prices, rather than contract at a price which seems somewhat out of proportion to market figures. Some business on good steam coals has been closed around $4, and we have also heard of some $3.60 business. This will not mean much when the spot market strengthens very materially.

BUFFALO

Bituminous Prices Still Sagging—Consumers Are Indifferent—Anthracite Is Plentiful.

Bituminous — Even lower quotations than last week are now given out by shippers, who are mostly doing only a small business. Nobody sees any sign of improvement and predictions of it have about been dropped. Coal will not sell freely again till the general business of the country revives.

All that can be done is to keep in sight what trade can be controlled and wait. A few contracts survive. They were called "poor stuff" in the boom days of the trade last fall, but they now represent about all the business that is done at a profit.

At the same time quite a good many mines are still running, for the loss is usually not so great as it would be to shut down. Then it is easy to be in line when the demand returns. The situation is a significant commentary on the effort in Congress to cut down the profits of people in the coal trade. It is a fact that those who sold coal at bonanza figures last fall are worst off now.

Bituminous quotations are still hard to make, but one leading jobber gives out the following figures: $3.50 for Youghiogheny gas, $3 for Pittsburgh and No. 8 Lump, $2.50@$2.75 for mine run, chiefly Allegheny, and $2 for slack.

Anthracite—Retailers are in position to meet all demands. With winter already waning no further difficulty is looked for. Production is so good that all premiums on independent anthracite are about off and they will not be likely to return right away.

Prices are not very steady. The independent price is not only somewhat higher than the schedule, but the larger companies do not always sell at uniform figures. The variation is not more than 50c. a ton, but it gives occasion to much speculation. Some have it that the new season's prices are to be put up every month ten cents or so, but the companies are saying nothing and it all may be mere guesswork. It is likely that there will be coal for Lake shipment soon and it is time that loading was begun if an average shipment is to be made.

Northwest

MILWAUKEE

Overstocked Coke Brings Sharp Decline—Coal unchanged in Price—Complaints of Poor Quality Anthracite.

The closing days of February witnessed a break in coke prices to the extent of $1.50 per ton, making the second reduction during the month, the total cut amounting to $2.75. Egg, range, and chestnut sizes now sell at $14.50 and pea at $11.50. Domestic sizes were held at $17.25 during January. The coke yards are piled high and demand is slow because of warm weather and half idle industries.

A brief spell of near zero weather, accompanied by a cold wave prediction which did not materialize, galvanized the coal market into a state of near activity during the past week. However, now that February is gone dock men and dealers can see nothing to look forward to and a spirit of dejection prevails.

Coal is moving slowly, both in the city and to the interior. Hard coals and Pocahontas now come by rail and anything that would check railway deliveries would cause a famine in these grades. The coal price schedule remains unchanged, though another drop in bituminous is expected during March.

MINNEAPOLIS

Wintry Weather Bolsters the Falling Market—Keen Competition to Clear Away Dock Supplies.

Just a hint of winter has been felt lately. But the last week of February is too late to hope for much in the weather line for the benefit of the coal business. As it was, the cold spell did steady things for a day or so. In a retail way, there was a rush of small orders coming from people who were running as close to the edge of their stocks as possible and who were holding off for still lower prices.

In a jobbing way, there was less effect shown, for the dealers can hardly run as close to the vanishing point in stocks as do the consumers, although they do their best to that end. But there was a little pickup here also. In the steam trade there was a steadying for a day or so. Screenings which have been almost impossible to move found more demand, and demurrage coal which has been hanging around like a poor relation also moved. No one hopes that the improvement is for more than a brief time, but every little bit helps.

Even the few days of cold weather have encouraged the dock trade to hope for a closer cleanup of stores than it had been counting on. As compared with former years, the dock situation is practically bare of hard coal at this time. The carry-over will probably be rather less than last year, which was down to a very small quantity. It is more on soft coal that the danger of loss is, and here there has been a good chance of a fair total held over. It will be less than for many years, probably less than last year, when it was around 2,500,000 tons. But a slump of $1 or more a ton on anything like that tonnage will hurt. Of course not all the held-over would take such a loss. Some companies held their prices down and have not reduced very much, possibly 65@90c. a ton at present. Others have reduced from $2@$3. Hence every reduction of stocks now looks very good to the trade.

There is some argument that the new season will not show any great reduction from this season's list prices, at least those now ruling.

This is something that the future can determine. Statistically there seems to be considerable to back up such a claim, but values in a falling market do not always follow the statistics.

Inland West

COLUMBUS

Cold Weather Slightly Increases Demand—Steam Market Steadier—Prices Better—Contract Market Quiet.

Lower temperatures have prevailed and consequently the dealer is coming into the market. There is still considerable distress coal to be had at low quotations, but on the whole more steadiness characterizes prices.

Retail conditions are not expected to be helped to any great extent during the present season. Dealers are content to buy from hand to mouth, and as a consequence it is a sort of hit and miss proposition. A larger amount of Pocahontas is now coming into this market.

Steam trade is showing more steadiness with a better demand for screenings. The reduction in lump production still continues and consequently there is a reduced supply. Manufacturing plants are now starting up more and more and fuel requisitions are larger. Extreme low prices are giving way to those ranging $1.75@$2 at the mines, and in some cases even higher.

Some discussion of contracting is going on but so far few have been closed. Neither the buyer nor the seller is willing to enter into agreements at present unsettled conditions. Speculation has it that mine run will sell on contract around $2.50@$2.90 and screenings around $2.25.

Production is still low and the tendency is toward less tonnage week by week. The report of the Southern Ohio Coal Exchange for the week ended Feb. 12 shows a production of but 135,348 tons out of a capacity of 568,933 tons from 352 mines reporting. Of the shortage no markets caused 354,627 tons.

CHICAGO

Retail Prices Drop—Steam Situation Improves—Railroads Showing Contract Interest.

In order to meet the present situation one of our biggest retail coal companies made some very sweeping reductions on all grades and kinds of coal, and consequently other dealers have been put in a position where they are forced to meet these prices. Enough time has not elapsed to find out whether or not these price reductions have stimulated buying.

The retailers, as a rule, are quoting the following prices:

Southern Ill. prepared coals	$8.25@$8.50
Southern Ill. mine-run	7.25
Springfield, Ill., or Ind., domestic coals	7.00@ 7.25
Pocahontas mine-run	10.00
Coke	14.00
Antracite egg and range	15.00
Anthracite chestnut	15.40
Anthracite pea coal	12.80
Anthracite buckwheat	11.00

The steam coal market is perhaps a little brisker. This, however, is not on account of any improvement of the industrial situation, but because production is dropping off fast and those who have coal to offer are no longer willing to sell it at a ruinous price.

Some of the railroad purchasing agents, with headquarters in Chicago, have been inquiring relative to contract prices for their 1921 requirements. Quotations given show very little tendency on the part of the operator to cut prices, as the figures are made on the basis of cost, plus a small margin of profit. As a result of these quotations no contracts have been closed, but it is expected that the railroads will make their fuel arrangements within a short time.

DETROIT

Lack of Buying Demand Continues—Prices Stable—Receipts Are Light.

Little visible progress toward improvement has been made during the week, either in steam or domestic. While reports are circulated of improving conditions in industrial lines, the effect on coal sales so far seems negligible.

Steam plants with their fuel consumption greatly cut down are in many instances relying wholly on their reserves for supply. With reserves being depleted and production cut off, some jobbers are forecasting the development of another period of soaring prices. This might be avoided, they say, if users of steam coal were to adopt a policy of buying which would enable mines to continue at least part-time production.

West Virginia or Kentucky block is quoted at the mines at $4.50, lump $4, mine run $2.75@$3 and nut and slack at $2. Ohio lump is $4, mine run $2.75 and nut and slack $1.75. Pocahontas mine run is $4.50. The quotations given, it must be explained, are those named in contract negotiations and can not reflect the actual market. Incoming shipments of bituminous have been reduced to a small tonnage and jobbers say there is not very much coal to be found on tracks. Speculative shipments are few.

ST. LOUIS

Demand Trifle Better with Colder Weather—Country Call Light, with Little Tonnage Moving North

Local conditions are somewhat better this week on account of the weather. Three or four days of below freezing weather has put a little edge on business, and the retail call is fairly good in the city, with some country demand.

For the same reason steam has improved, especially in the Standard field, with the top of the market on screenings $1.25 as against 85c. a week ago. However, many mines have unbilled cars on hand of all sizes, for the demand for any one size is not enough to clean up the entire field.

Retail prices with several dealers were cut 25c. a ton the last week. This leaves Standard selling $6@$6.25, Mt. Olive $6.75@$7 and Carterville $8@$8.50 delivered.

CLEVELAND

Demand Slightly Improved Due to Early Movement to Lake Ports—Price Tendency Lower—Production Receding.

Bituminous — The contract for the City Hospital calling for 12,000 tons of steam slack has been closed on a basis of $5.80 a ton delivered. This price compares with $7.08 carried in last year's contract. It also represents a reduction from $6.60, which has been maintained for delivered slack for some weeks.

Reports from the coal fields indicate declining output as a result of smaller industrial consumption. Each week brings additional promises of more plants to open, but so far revival has traveled little beyond the prospective stage. Where plants are operating stocks are being used and in cases where no stocks exist hand-to-mouth buying prevails. The opinion seems to hold that prices have not yet reached a sufficiently low level.

Bituminous coal receipts at Cleveland for week ended Feb. 19 are the lowest in many months, being: industrial 825 cars, domestic 359 cars.

The prices of Pittsburgh No. 8 lump and slack have fallen within the last week. Slack is now quoted on a spot basis at the mines $2@$2.25 and lump $2.75@$3.75. The falling off of demand for and production of lump coal is likely to reduce the supply of slack.

Pocahontas and Anthracite—The recent cold snap has quickened a dead market somewhat, but while orders are more numerous they are for exceedingly small quantities. Ample supplies of coal are on hand in dealers' yards. No price changes at retail have occurred.

Now that anthracite has become more free in this section, dealers are reported to be stocking up in anticipation of storage demands on the part of householders in addition to present needs.

Lake—The movement of coal to the Lakes is growing. This fact has helped the wholesale demand for Pittsburgh No. 8 coal slightly. A number of steamers are being loaded at the various docks and the season will open in a few weeks.

Retail prices of coal delivered are:

Anthracite — All grades $14.90. Pocahontas—Shoveled lump, $11.60; mine run $10.50. Domestic Bituminous—West Virginia Splint, $10; No. 8 Pittsburgh, $8.15; cannel lump, $12.15. Steam Coal—No. 6 and No. 8 slack $5.80; No. 6 and No. 8 mine run $7.75 and No. 8¾-in. lump $7.50.

CINCINNATI

Market at Standstill—No Contracting—Retail Trade Sluggish Despite Cold Snap.

Despite the present cold weather, trading remains at a standstill with but very little prospect of improvement in the near future. The present cold snap is not enough to warrant any material change in the market conditions.

That it will probably be no less than six months before conditions in the market show signs of improvement, coincident with the reopening of many of the manufacturing plants in the city is the general opinion of the trade.

Many plants still have on hand a sufficient supply of coal to last for some time. Attempts on the part of wholesalers to arrange contracts with those firms now operating are meeting with but little success.

Mine quotations remain about the same. Bituminous lump was quoted $3.50@$4, while nut and slack brought $150@$2. Smokeless lump was $5.50@$5.75 and mine run $3.75@$4. The following quotations were made by dealers: Bituminous lump, $9.25@$10; mine run, $8.50@$9; smokeless lump and egg, $10.50@$11; mine run, $9.50; anthracite egg, $15@$16.25; domestic egg coke, $14.50@$16.

Southwest

KANSAS CITY

Demand Slumps with Warm Weather—Mines Resume—Prices Firm.

Cold weather which started a week ago lasted only two days and spring-like weather again prevails. The few days' suspension in mining operations last week on account of the trial of Howat is over and miners have returned to work. All mines are running that have a place for their coal.

There have been no changes in prices; Kansas lump is quoted at $5.50, nut $5, slack $3.75@4; Arkansas lump $6, mine

run $4.50, slack $3.50@4; north Missouri lump $4.50, mine run $4, raw slack $2.80@$3.15.

South

LOUISVILLE

Cold Weather Tightens Prices — Operators Quoting High on Long Contracts —Prospects Looking Better.

Unexpected cold weather over the week end of Feb. 19, resulted in a temporary demand for steam and prepared sizes on the mines. Demand has been generally better and has brought higher prices for the time being.

For some time past operators have been sacrificing their screenings to sell lump, and this in turn has ruined the mine run market. With a slack market for lump coal and not much coal being screened, slack will get scarce, advance in price, and mine run will come back in demand. That this condition is true is shown by some of the larger operators and jobbers who will not take screenings contracts for less than $2.75@$3.

Prices have improved materially. Hazard mine run is quoted $2.50, and block $3.75@$4. Elkhorn prices compare with Hazard except on mine run, which is $2.65. Jellico is quoted at about 15@25c. under Harlan and Straight Creek, these two grades being quoted at $4.25 for block, $3.75 egg, $2.90 mine run, and $1.70 for nut and slack.

There has been no large increase in demand from any one industry or section, but a slight improvement in industrial demand is perceptible, coming from general sources.

BIRMINGHAM

No Steam Market — Domestic Also Slows Down — Production Further Decreased.

Conditions show practically no change over a week ago. In fact, some claim the situation is slightly worse, due to continuity of the dullness which has affected the industry since the Christmas holidays. There is virtually nothing doing in the way of spot buying, and the opinion has been offered that the trade would probably not approach anything like a normal stride prior to late summer or early fall. In the meantime there is no effort to force buying and prices remain fairly firm. Quotations at the mines are so follows:

	Mine Run	Washed	Lump
Carbon Hill	$2.85@3.35	$3.35@3.85	$5,25@5.50
Black Creek and Cahaba	4.00	4.00@5.00	5.00@6.00
Pratt.....	3.35@4.00	....	....
Corona.....	3.50	....	6.00

Protracted mild weather has created a soft domestic market and there is a surplus of some grades, though it is a great deal easier to find a customer for lump coal than for steam. However, this is due partly to the fact that the output of domestic coal is necessarily restricted and when a normal demand exists there is a shortage, particularly of the better grades.

Production has been slowed down and is now off from 80,000 to 100,000 tons per week as compared with the output of a month ago. The calling off of the strike will have no effect whatever in labor circles, as full working crews have been the rule at all mines for the past two or three months.

West

DENVER

Lower Prices Encourage Trading — Retail Prices Shaky.

Indications of a firmer market are apparent for the first time in many weeks. The situation is far from encouraging, however, for sales attributed to lower prices are in fact only the weak responses of consumers endeavoring to get along with as little coal as possible for the remainder of the winter.

In June, 1920, operators maintained a price of $4.50 for lump lignite. In October, it went to $6, and now is down to $5.25. The cheaper grade lump sold for $3.50 at the mine last June, $5 last fall and today is back to $3.50. This condition has prevailed in the face of increased maintenance costs and higher wages, and operators are at a loss to know which way to turn for relief.

The recent cut on Louisville lump lignite of 65c., and of 90c. for second grade lignite, was due in part to meet extremely far-fetched reductions of certain retailers. This competition forced first grade to $9@$9.25, and second grade to $6.75@$7.25. Shoveled lump is $7 or less for second grade lignite.

Bituminous lump in Routt and Southern fields is $6.50 and nut $6. This makes Routt $12.50 and $12, respectively, on the Denver market, and Southern $11.50 and $11. Bituminous steam is steady at $3@$3.50 f.o.b. mine, and $6.75 retail, while lignite steam is $2.40 f.o.b. mine and $5.30 retail.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Market Remains Stagnant—Late Opening for Lakes—Operators Firm on Contract Prices.

While the operators who are willing to sell spot coal at competitive prices make up only a very small percentage of the total capacity there is enough represented to make prices very irregular. The spot market is shown in the Weekly Review, but the price is frequently if not usually shaded. A shipment of 95 cars of consigned coal to Canada had to be sold and brought $1.75, seller to pay demurrage, this amounting to $28 on the first car unloaded, and making the amount realized $1.05 per ton.

While demand is extremely limited, there are fair shipments on many classes of contracts, particularly those to public service corporations. The Pittsburgh Coal Co., which has much business of that sort, is now shipping at about 80 per cent of its average rate during the second half of 1920. Taking the district as a whole, production is at about 40 per cent of rated capacity.

Operators are considering the matter of prices on contracts for the coal year beginning April 1, but consumers are showing no disposition to open negotiations. The Pittsburgh Coal Co's. prices are unchanged since the reduction of Jan. 17. Two large independent operators state that they will not sell at less than $3.75 for mine run and one smaller operator, having only gas coal, states that he will adhere to $4 for ¾-in. gas, all three being disposed to close their mines entirely if they cannot secure their prices.

The Lake shipping season will probably be late in opening. Iron ore shipments will begin quite late and it would be difficult to arrange for much coal shipment early in the season on account of the lack of a return haul. Finally, the coal operators who ship in the Lake trade are joined in an effort to secure a readjustment of the rates on cargo coal relative to bunker and local shipments. The old rate from the Pittsburgh district was $1 for local and bunker coal, cargo coal being 78c. The present rate is $2.05½, the cargo rate being $1.86, or 90½ per cent as much, and the effort is to have the rate made 78 per cent, which would be $1.60.

CONNELLSVILLE

Trade Remains Stagnant—Furnace Interests Decrease Operations—Merchant Operators Resigned to Inaction

The coke trade remains absolutely stagnant. There is not much further decrease in operation of blast furnaces dependent on coke purchased in the region, but that is simply because nearly all such furnaces went out long ago. The furnace interests that have ovens in the region are decreasing their operations further and are down to a very low rate while the Steel Corporation has begun to decrease its operations sharply, with corresponding decrease in coal and coke operations in the region.

Merchant coke operators in general are making no effort to do business, feeling that the case is hopeless as the furnaces cannot sell pig iron at any

price. One or two operators, having ratio contracts, have some hope that by revising contracts they can aid the furnaces in selling pig iron and getting into operation again. One operator who has ratio contracts at 5 to 1 on basic pig iron, which is now down to $25, valley, but with a contract minimum of $5.75 on coke, has an open price on coke of $5.50 and would furnish this at a still lower price to holders of contracts.

Spot furnace is quotable $4.50@$5, these being simply asking prices. Heating coke has brought $4, but there is only limited absorption even at this price. Spot foundry is $5.50@$6.50, depending on grade, with a small movement daily in carload lots.

The *Courier* reports production in the week ended Feb. 19 at 113,910 tons by the furnace ovens, and 21,410 tons by the merchant ovens, making a total of 135,320 tons, a decrease of 10,820 tons.

CENTRAL PENNSYLVANIA

Production Touches Low Level — Outlook Is Not Improved.

At the present rate, production will reach the lowest level during February for the last five years. Based upon the first eighteen working days of the month, the output for the entire period will not exceed 3,000,000 tons.

Reports indicate that conditions are much worse than in the month of January, that there is no sale for coal and but little evidence of improvement on the surface. The daily average production in the entire district is 2,300 cars while in normal times it is 3,600. This does not indicate the real condition, however, as much of the present output is being stored in order to give the miners part-time work.

UNIONTOWN

Inquiries for Future Deliveries Appear —Talk of Wage Reductions—Railroads Negotiate for Contracts.

Submission of inquiries for fairly large coal tonnages by Eastern consumers and exporters has renewed the optimistic spirit which has continued to prevail during the present readjustment period. Operators admit that there is nothing definite in the inquiries. What they are pinning their hopes on, however, is the fact that large consumers are again looking toward their fuel supplies.

Perhaps the most accurate status of the market may be described as "what you can get." Sales of steam coal have been made in small lots as low as $1.60 @$1.75. Other operators are holding tonnage on track for $2. Byproduct coal is sharply quoted at a range of $2.25@$2.50, with some tonnage moving. For future delivery there are few operators who will discuss terms, but it would appear that for contract, the price must be something above $2.50 before any coal will be mined. Negotiations are understood to be under way by several large railroads for their supply for the fiscal year commencing April 1 but price views of purchasing agents would make it appear as unlikely that any contracts will be placed in this territory. The maximum offer of the railroads seems to be $2.50.

The wage reduction talk again made its appearance with the retrenchment policy of the H. C. Frick Coke Co. which is gradually curtailing production at all plants. Sentiment here among independent operators has about crystallized in the belief that new wage schedules will be put into effect early in the second quarter. In Pittsburgh negotiations are under way for several large coal contracts with wages as of 1919, approximately 35 per cent less than the present scale, indicating that a reduction is being anticipated in closing contracts.

EASTERN OHIO

Prices Weaken with Prolonged Sluggish Market — Production Lowered — Lakes Tonnage Light.

Production touched new low figures for the week ended Feb. 19, output being estimated at 259,000 tons. This represents a decrease of 26,000 tons under the preceding week and is only about 42 per cent of potential capacity. Figures given out by the Pittsburgh Vein Operators' Association show that while their mines worked but 40 per cent during the week, output was on a basis of 47 per cent rated capacity of mines reporting.

Mines on the New York Central continue to work four days per week and excepting the smaller operations there is no increase in the number of mines totally closed down. The labor situation is quiet but notwithstanding restricted opportunity for work, the district is not entirely free from occasional disturbances which result in some operating time being lost.

While some additional steamers have been lined up for coal loading, the movement to Lake has been comparatively light and has not been perceptibly felt as a bolster to production. There are as yet no signs of improvement in demand although jobbers contend that in anticipation of an early opening of the Lake season there will very soon be felt a stiffening in the market. Industrial plants are running with hand-to-mouth fuel supplies and seem content to take care of their needs in the spot market.

Mine prices on spot coal have softened slightly, the range being somewhat as follows: Slack, $1.75@$2; mine run, $2.25@$2.50; ¾-in. lump, $2.75@$3; 1¼-in. lump, $3@$3.50; domestic lump, $3.50@$4.

FAIRMONT AND PANHANDLE

Dullness More Pronounced—Low Contract Offers Refused—Production Continues Downward Trend.

FAIRMONT

Dullness was most pronounced during the week ended Feb. 19 and production declined further as the result of "no markets." Toward the end of the week there was a marked decrease in railroad shipments, the B. & O. taking hardly any coal at all. Although Curtis Bay shipments held fairly well, there was no demand at Tidewater. Contract offers by railroads and large buyers, in some cases as low as $1.75, of course precluded further negotiations.

NORTHERN PANHANDLE

Owing to dwindling markets the only change in conditions for the third week of February was in the direction of lowered production. Prices apparently cut no figure in moving spot coal, as the demand for fuel simply did not exist at any cost. Because of the general suspension of contracts and the inactive spot market, production was less than one-third of capacity.

Middle West

SOUTHERN ILLINOIS

Prices Firm—Demand Is Sluggish—Production at Low Level.

Prices in the Standard field are the same as last week, with the exception of screenings, which have stiffened slightly. Mines are working one and two days a week, with some idle for several weeks. Railroad mines are gettin about three or four days a week. A little of this coal is moving to Chicago and some to the Northwestern market.

In the Mt. Olive field somewhat similar conditions prevail, although the railroad tonnage is heavier. Movement to the North and Northwest is also heavy. The prices here are unchanged.

In the Carterville field there has been no change since last week. The mines are working about three days, with "no bills" of all sizes on hand.

MIDWEST REVIEW

Curtailed Production Strengthens Prices—Demand Still Very Weak—Contract Market Lagging.

Every day brings more announcements from operators both in Indiana and Illinois, to the effect that they are closing their mines until conditions change. Most of the mines closed have been producing steam coals rather than high-grade domestic. There has been no improvement, so far as the coal trade is concerned, in the industrial situation, nor has the weather been in our favor.

Coal production dropped off last week and it will drop off some more this week. While the demand for coal remains very unsatisfactory, prices obtained during the last few days have been an improvement over those prevailing recently. The factor responsible for this condition is as follows: The domestic trade, for the time being, is completely out of the market and consequently very little lump, egg and nut coals are moving. Having no place to put prepared coals, the operators have had to stop running and this has brought about a strengthening in the market for screenings. In some cases.

prices advanced 50c.@75c. a ton within a few days. Spot prices are shown in the Weekly Review.

Taking into consideration the different producing fields, it is safe to say that even the best of them are not running in excess of 50 per cent of the time, while the less favored fields are running from 40 per cent down to 20 per cent, if they are running at all. As a rule, the mines in Franklin County are running on a basis of 50 per cent, and in order to do this, they have put in storage a very considerable amount of their tonnage. The Franklin County Mines are undoubtedly doing more than any of the others.

Usually at this time of the year, a number of the larger coal contracts have been closed, but this is not the case this season, as we have heard of no large agreement which has been signed. It is to be expected of course, that there will be a natural shifting of business this year. Buyers, who have relied during the past years on certain operators, have become discouraged over the treatment they received last year, and consequently are casting about with the idea of placing their business with other firms. This rather general readjustment will take time, and we feel safe in predicting that the contract season will be later than usual this year.

WESTERN KENTUCKY

Mines Operate on Better Schedule—Prices Ranging a Little Higher — Demand a Trifle Stronger.

There is a considerable range to prices just now. Averages last week for prepared sizes were $3.15, based on a range of $2.75@$3.30; mine run, $2.65; range, $2.60@$2.85; screenings, $1.95; range, $1.70@$2.25. Mine run, which has been quoted down as low as $1.85@$2 is now $2.25@$2.50; nut $2.75; nut and slack, $1.75@$2; pea and slack, $1.25@$1.50. On prepared sizes prices appear a little stronger, while screenings are not gaining very rapidly.

Movement is now a little better on all grades, mines operating two days or more a week, with some fair demand for lump. Mine run is a little dull, screenings are easy.

Railroads are taking more coal, and there is also a better movement into the Southern markets. Prospects are considered fair.

INDIANA

Contract Orders at Minimum—Domestic Call Easing Off—Contract Offers too Low.

At the present time railroads are not making more than 50 per cent of their contracted coal and are buying none on the outside. The small tonnage moving is mostly on industrial contracts that have been greatly curtailed or on a few open market spots that are quickly covered with many offers.

A fair demand for domestic at $3.25 @$4 has caused a surplus of screenings which have been sacrificed as low as $1. In the last ten days screenings are showing decided signs of strengthening but with a declining domestic demand the shippers' realization will probably be about the same as that prevailing the past six weeks.

The producer is naturally reluctant to contract at this time, as, with a greatly depressed market, it is hard to interest a consumer unless the price quoted is below the cost of production.

DUQUOIN

Coal Mined with Difficulty—Production Being Steadily Curtailed.

Market conditions remain unchanged and no relief is seen for the near future. Very little coal moved last week and a sudden blizzard failed to have any material effect on the demand. Domestic fell back to a level with steam coal and lump dragged heavily. Many dealers throughout the Northern districts are filled up and absolutely refuse to buy coal under present conditions.

Production did not average over 50 per cent throughout the past week with still more mines shutting down indefinitely. Railroads are reducing forces in the mining centers.

Middle Appalachian

LOW-VOLATILE FIELDS

Producers Refuse Low Contract Offers — Output Further Curtailed — Much Unsold Tonnage Still To Be Absorbed.

New River and the Gulf

Greater dullness has not been experienced in the New River field in 10 years than existed during the week ended Feb. 19, as reflected by a daily average production of not more than 11,000 tons. This was almost entirely moved on contracts which have been cut to the bone. Production is being steadily reduced as operators have largely discontinued making forced sales.

Heavy snows hampered production on Feb. 21 although all orders were easily filled thereafter. There is still much unconsigned coal at Tide and west of Cincinnati.

Winding Gulf operations were down close to 30 per cent. Practically the same conditions existed as in the New River section. Operators are prepared to further curtail tonnage if necessary until the market justifies resumption.

Pocahontas and Tug River

Pocahontas production dropped to about 200,000 tons, the lowest point for some time. One day's operations held good for most mines. If anything, conditions had changed for the worse and producers could not see any improvement until the surplus Pocahontas coal on the rails had been absorbed.

Reduced contract requirements further curtailed Tug River production. Slack was impossible to move and proved a serious bar to production as such unsold loads were side-tracked and further cars denied producers.

Very little future business developed as a result of growing contract inquiries, as prices could not be agreed upon. Heavy snows temporarily retarded production, although all orders were easily filled.

HIGH-VOLATILE FIELDS

Production Being Steadily Lowered—No Market Losses Grow—Contract Requirements Almost at Minimum.

Kanawha

Conditions were even more dull in the week ended Feb. 19. Buying curtailment increased and contract orders continued to scale down. The few mines still in commission were able to run only about one day. Comparatively little tonnage was moving to the piers. Production did not exceed 20 per cent of normal.

Logan and Thacker

The apathetic market continued in the Logan region. Although the spot trade was practically nil several contract inquiries developed during the week, few of which materialized because of low prices. While some producers were still shipping on consignment the practice was becoming less general because of the poor prices secured.

No market losses increased in the Williamson field. Only one mine lost any time because of the strike. It was not possible to sell in the open market and contract tonnage was being pared down, as in other fields.

Northeastern Kentucky

Production was limited to 21 per cent chiefly by no markets, as it was almost impossible to move spot coal except at ruinous figures. Domestic demand was also slipping and curtailment of production was naturally becoming greater.

Virginia

Conditions remained practically unchanged during the week ended Feb. 19, mines producing about 50 per cent of capacity. Larger operations were confining their tonnage to contracts, as the spot market had disappeared, or what few offers were made carried a price which producers would not readily consider.

West

UTAH

Temporary Stimulation with Colder Weather—Prices Holding Firm.

Colder weather has bolstered the demand, temporarily, at least. Producers are not looking for any great improvement, however. Retailers are fairly well stocked and the coast trade is not at all brisk.

Prices hold firm and there is no rumor of any early reduction at the mines. In the opinion of producers and retailers, it will not be possible to cut prices with the present existing costs, and freight rates must come down before prices can be changed appreciably.

MINE And COMPANY NEWS

ALABAMA

Mine rescue work by airplane was inaugurated in the Birmingham district by the **Montevallo Mining Co.** in conjunction with the mine rescue station at West End and the Dixie flying field recently, when rescue apparatus was transported 30 miles by airplane in answer to a hurry call from the mine.

Reid and Lowe, Birmingham, have been awarded the contract to do the piling and other work on the **coal terminal at Port of Cordova** on the Warrior River, and the Manhattan Rubber Manufacturing Co. has been awarded the contract for the conveyors, belting and other coal handling equipment. The Cordova bins are to cost about $70,000, and will add greatly to the capacity of the river for handling bunker and export coal to Mobile and New Orleans.

ILLINOIS

The Gillespie Coal Co. has sold its mine and acreage to John Henderson of the West Virginia Coal Co. of St. Louis. This mine is local on the rail of the Illinois Traction System and is being worked on the old unworked acreage of the St. Bernard properties which were abandoned many years ago.

It is generally understood that the mine of the **Scranton Big Muddy Coal Co.,** owned and controlled by Scranton, Pa., people, has been sold for something like $350,000 to the **Lake & Export Coal Co.**

The Block Coal Mining Co., with capital stock of $65,000 has been incorporated. The incorporators are Harry Tanner, Ben Cudder and Carl H. Preihs.

The organization committee of the **Little Grove Coal Mining Co.** is making excellent progress in its work. Production will be started about May 1.

The Cantrall mine of the **Sangamon Coal Co.,** has been closed until demand for coal has become better.

The annual report of the **Illinois Department of Mines and Minerals** shows that Williamson County ranks second in the production of coal in Illinois, being surpassed only by Franklin County.

The relative rank of counties producing 1,000,000 tons or more of coal for 1920 follows:

Franklin	11,299,280
Williamson	9,631,386
Macoupin	6,887,547
Sangomon	6,884,049
St. Clair	5,280,768
Saline	4,539,853
Madison	3,882,620
Vermillion	3,248,946
Christian	2,606,491
Perry	2,408,900
Fulton	2,331,975
Randolph	1,278,283
Peoria	1,244,013
Clinton	1,092,882

INDIANA

Four men were killed Feb. 16 by an explosion of gas in the **New Liberty** coal mine, situated near Oakland City. The blast occurred just after the four had reached the bottom of the shaft, where they were to enlarge the landing. No other workmen were in the mine at the time.

KENTUCKY

The Scanlon Coal Co., Louisville, is featuring Carbocoal, produced by the Sun Glo people, having secured state distribution for this coal. This coal is produced at Clinfield, Tenn. the first car arriving in Louisville a few days ago.

The Christie-Sowards Mining Co., of Pikeville, capital $200,000 has been chartered by J. J. Christie, E. H. Sowards and John A. Sowards.

The situation regarding railroad consumption is not improving much. **The Louisville & Nashville R.R.** has started buying a little coal in western Kentucky again, but in small lots. It is reported that the L. & N. now has 700,000 idle cars on its tracks. At the same time there are large contracts for cars in the shops of the American Car & Foundry Co. and other independent shops. Under the wage scales paid by the railroads and forced upon them by the Railway Board, it has been found cheaper to lay off shopmen and contract for cars to be built outside, than to build them in railroad-owned shops.

State Senator Thomas B. Watts has announced that he is leaving for a six weeks trip to California, and that he is positive there will not be a special session of the State Legislature this spring to consider **coal taxing on the tonnage basis.**

The Ridley Ice & Coal Co., Louisville, capital $40,000, to handle coal, grain feed, etc., and operate a cold storage plant, has been incorporated by C. W. Inman, H. C. Inman and E. G. Boone. C. W. Inman is head of the Inman Co., operating the Inman Veneer & Panel Co., and Inman Furniture Co. He organized the big local combine known as the Merchants Ice & Cold Storage Co., selling his interest some years ago, under an agreement to keep out for ten years, the time now having expired.

MINNESOTA

The Northwestern Coal Dock Operators' Association of Minneapolis, is due for another investigation, at the hands of a committee from the Minnesota legislature. This is almost a certainty. It has been done at intervals in the past, without uncovering anything that would justify even a yellow sheet in getting out an extra, but the legislators simply cannot rest without it.

The St. Paul Coal Co., of St. Paul, has received applications from a number of interior Minnesota cities to open yards in the different cities, so their citizens may buy at the prices named to St. Paul. The management states that the extension of facilities to the country will be made as soon as it seems feasible. The same range of low prices is promised for the country when the extension is made.

OKLAHOMA

The B. & A. Mining Co., Okmulgee, is planning for the installation of new electrically operated coal-mining machinery, including hoisting equipment, etc. Bids will be taken until early in March.

OHIO

Commander James C. Hilton, United States Navy and Howard W. Amell, Washington, Assistant United States Attorney General arrived in Cincinnati recently to aid Assistant United States District Attorney Allen Roudebush in the trial of the suit of the **C. G. Blake Co.,** against the United States, in the Federal Court. The Blake company seeks recovery of approximately $22,000 alleged to represent the difference between the price paid by the Government and the price charged for coal supplied during the war period to the Navy Department. It is alleged by the company that the Government offered only $4 a ton, whereas the price charged by the company was $5.61. The amount actually paid by the Navy Department was $3. This is to be made a test case as to the right of the Navy Department to set its own price for coal.

The Crab Orchard Mining Co., has started the erection of a modern power plant at Freeport to develop a large coal acreage. The property is located on the Baltimore & Ohio and is in the southwestern corner of Harrison County. It is planned to put in an electrical plant for an output of 500 tons daily.

It is reported that former State Auditor **A. V. Donahey** has purchased 116 acres of coal land near New Philadelphia, in the Middle District, where he will engage in the coal mining business.

The Belmont-Fairmont Coal Co., of Fairmont, W. Va., will open a tract of Pittsburgh No. 8 coal land in Belmont County, Ohio, near Flushing, on the Baltimore & Ohio R.R.

Stockholders of the **Hanover Coal Co.,** operating mines near Burgettstown, Pa., met in Martins Ferry, electing the following officers; President, W. J. Sprow, of Sandusky; vice president, A. C. Beetham; treasurer, C. M. Wyrick, and secretary E. B. Graham. Announcement was also made that the company's offices which were formerly in the Kirby Bldg., Cleveland, had been removed to Pittsburgh.

In connection with the annual meeting of the **Climax Coal Co.** at Martins Ferry at which officers were elected, announcement was made of the intention of the company to improve its properties in many ways. Officers elected were: George D. Banfield, president; W. J. Cook, vice president; Charles Hartman, treasurer; F. W. Mahan, secretary. On the board of directors are President Banfield, Vice-President Cook, W. A. Williams, A. I. Negus, H. S. Bradley, Dr. O. O. Sink and T. Hays White. It is proposed to increase production by making improvements at the company's stripping mine as well as its deep mines, such improvements to be undertaken at once. The company has about 2,000 acres at Smithfield station in Jefferson County, Ohio, together with a modern tipple, stripping shovels, etc. An additional siding will be built from the Pittsburg-West Virginia R.R. and additional tipple equipment will be installed. The company began operations in 1918 and its property is at present valued at about $1,000,000.

The Ohio State University was allowed the sum of $125,000 by the Ohio State Emergency Appropriation Board for the first half of 1921, of which sum $71,500 is to be spent for coal.

The Bremer Coal Co. is planning for the development of about 225 acres of coal property near Cambridge, and will install machinery and operating equipment for this purpose.

Wheeling people for the most part are interested in the newly organized **Yorkville Coal Co.** capitalized at $50,000. Though organized as a West Virginia concern its mines will be at Yorkville, Ohio, those principally interested in this company being Clarence Adams, of Buffalo, N. Y.; J. E. Morgan, O. J. Miller, D. C. Hunt and James M. Noble, all of Wheeling, W. Va.

PENNSYLVANIA

A large section of State Street, in the Larksville section of Wilkes-Barre, has dropped into the mines of the **Hudson Coal Co.,** and only the concrete pavement held up. The Hudson Coal Co. has been expecting subsidence in the vicinity of the cave, and recently purchased twenty houses which are likely to be damaged or destroyed.

The inspector of the **Twenty-fourth Bituminous District** has just filed his report with the State Department of Mines. The district includes 73 mines in and around Johnstown, Scalp Level, Windber, Miller, Run, Arrow, Cairnbrook, Central City, Haskins No. 3 and other small places. Five mines were not operated and three were reported containing gas. The 1920 output was 5,603,820 tons or 2.5 per cent less than in 1919. The installation of safety devices reduced the fatalities in the district to eleven, a reduction of 39 per cent. There were 61 non-fatal accidents. About half the coal was mined by hand and the other half by electrically driven machinery. An average of 4,756 persons were employed in the mines and 1,243 outside. Nine new mines opened during the year and none was abandoned.

The Lehigh Valley Coal Co. has resumed operations at its Oneida, Derringer and Tomhicken mines, following a brief suspension of work due to excess stocks at the collieries.

The Buck Ridge Colliery, near Shamokin, has been acquired by new interests, headed by **W. J. Fallon.** The new owners are reported to be planning for general expansion for increased output. The mines have been giving employment to about 500 men.

The State Legislature is considering a bill, introduced by Representative Schaeffer, Schuylkill County, fixing **standard sizes of anthracite**, and requiring inspectors of weights and measures to make tests.

Nearly one million tons of coal were saved for the miner's pick when Judge Henry, of Lebanon County, set aside an injunction granted several years ago against the **Thomas Colliery Co.**, which can now mine vast tracts under Shenandoah, which was prevented for years. The case has been before three judges in ten years. The plaintiffs alleged mining would endanger buildings on the surface.

Reports have been received that coal options have been exercised by the **H. C. Frick Coke Co.** for the surface of three farms at Ginger Hill, near Monongahela, as a site for a new mining town. There are also rumors that the company plans to remove coal from its vast Greene County acreage through an underground system to the river for shipment to the steel corporation's byproduct ovens. Application for a charter for construction of a railroad to the surface involved in the options has been made.

With the razing of the old **Storrs breaker** of the Delaware, Lackawanna & Western R.R. Co., just above the city line in Dickson City and of the **Marvine breaker** of the Hudson Coal Co., in North Scranton, two of the oldest landmarks of the mining industry in the valley are disappearing. Both structures, their usefulness outlived, are giving way to modern inventions and machinery and are being torn down as a result of the completion of two steel and concrete breakers erected nearby.

The report of the inspector of the **First Anthracite District** which has been forwarded to the Department of Mines shows that 2,764,121 tons of coal were mined in the district during the year. The district comprises mines in Lackawanna, Wayne, Susquehanna and Sullivan counties. The report follows:

Hudson Coal Co.	556,768
Hillside Coal and Iron Co.	409,309
Mt. Jessup Coal Co.	277,171
Connell Anthracite Mining Co.	253,642
Scranton Coal Co.	241,505
Lackawanna Coal Co.,Ltd.	227,394
Northern Anthracite Coal Co.	209,209
Robertson Coal Co.	176,623
Racket Brook Coal Co.	141,865
Temple Coal Co.	89,219
Barton Coal Co.	72,615
Carbondale Coal Mining Co.	25,165
Staples and Bell Coal Co.	20,443
Grove Hill Coal Co.	18,608
Northeast Coal Co.	12,037
Bernice Anthracite Coal Co.	11,578
Bright Coal Co.	10,490
J. W. Kirby & Sons, Inc.	10,480
Total	2,764,121
Production by Counties:	
Lackawanna	1,301,098
Susquehanna	419,789
Wayne	568,805
Sullivan	474,429
Total	2,764,121
Number of persons employed inside and outside	4,589
Number of fatal accidents inside and outside	16
Number of non-fatal accidents inside and outside	45
Number of tons of coal produced per fatal accident inside and outside.	172,751
Number of wives made widows	11
Number of orphans	30

Production of coal in the **Seventh Anthracite District** was greater during 1920 than in any year since the district was created. The district comprises the upper portion of Luzerne County and part of Lackawanna County. There were thirteen fatal accidents and thirty-nine non-fatal mishaps. The production by companies follows:

Delaware, Lackawanna & Western R.R. Co.	1,150 257
Pennsylvania Coal Co.	655,919
Hillside Coal & Iron Co.	111,367
Suffolk Coal Co.	227,321
Jermyn & Co.	344,241
Scranton-Taylor Coal Co.	43,942
Dennington Coal Co.	37,547
Total	2,570,599
Production by Counties:	
Lackawanna	1,858 376
Luzerne	712.223
Total	2,570.599

Fire that did several thousand dollars damage broke out recently in No. 5 breaker of the **Susquehanna Collieries Co.** at Nanticoke. The top of the structure was burned, but the flames were kept from spreading to the machinery. Carpenters were immediately placed at work repairing the damage.

A force of men is engaged in the reconstruction of the **Union Connellsville Coal Co.'s** mine. Officials plan an expenditure of $200,000 in the rebuilding of the mine, which was practically wrecked as a result of a recent fire.

TENNESSEE

The Palmetto Coal Co., operating mines at Cartwright, has announced a 25 per cent reduction in wages of miners, which has been accepted by most of the employees.

UTAH

As soon as definite surveys are completed and arrangements made for assembling material, active work will be started on a new railroad which will traverse Gunnison valley. The road will start at the coal fields in Salina canyon, and will pass through Axtell, Centerfield and Gunnison, skirting Rocky Point, and continuing north, connecting with the Los Angeles & Salt Lake Route at Juab.

A legal battle waged since 1907 ended recently when the Secretary of the Interior ruled that 600 acres of coal land in the Sweet school section of Carbon County, valued at more than $500,000, purchased by the **United States Fuel Co.** really belonged to Le Roy Eccles, Geo. H. Davis, W. A. Wright and the estate of the late G. H. Tribe, all of Ogden. The land was originally purchased by Arthur Sweet from the State. After a controversy in which the Federal Government claimed the property in that title to coal land did not pass to the State, the fuel company purchased the land from Sweet. After a reversal of the decision which again gave title to the United States, Eccles and others purchased the property. In the ensuing legal tilt in which the coal company sought to regain possession, the Secretary of the Interior awarded the land to the Ogden individuals.

VIRGINIA

In connection with the electrification of its coaling piers Nos. 2 and 3, the Norfolk & Western Ry. Co., will install a new coal dumper with capacity to handle 120-ton cars. The work and installation is estimated to cost about $650,000. The company will also install a new trimming machine for handling coal cargoes, estimated to cost about $150,000. Arrangements are being made for the purchase of 1,000 new coal cars, each of 120-ton capacity, to cost about $5,750,000.

WEST VIRGINIA

Practically all the books and records of both the **Randall Coal Co.** and the **Jarvis Coal Co.** were lost in a fire which destroyed the office building of both companies in Morgantown as well as a store building which had been completed a short time ago. The loss amounted to between $15,000 and $20,000.

Development of Marion County coal land will follow the organization of the **Vassar Coal Co.** capitalized at $75,000, which will have its headquarters in Fairmont. Conspicuous in the organization are: Bruce H. Fanus, Austin T. Marcum, John Russo, Jr., Anthony Shuttle and Petter Ferretti, of Fairmont.

Mining in Mingo County will be undertaken by the **Shumate Coal Mining Co.** which has just been organized with a capital stock of $50,000. Largely interested in the new company are: Elizabeth Shumate, Charles Tarney, Walter Lyle, Mary Tarney and Mary Lyle of Naugatuck, W. Va.

Eighteen mines will be developed in McDowell County by the **United States Coal & Coke Co.** of Gary, a subsidiary of the United States Steel Corporation. Several hundred thousand tons of coal will be the annual output.

An accident at the Windsor mine of the **American Gas & Electric Co.** near Beech Bottom, on Feb. 2 cost the lives of three miners. Mine timbers were unable to stand the strain and when they snapped the three men were crushed beneath tons of earth. Although miners who escaped injury made every effort to dig out their fellow workers the latter were dead when their bodies were recovered.

H. J. Booth, glass manufacturer and coal producer of Pittsburgh, has transferred to the **River Seam Coal Co.** in which he is interested, the holdings of the **North Fairmont Coal Co.** recently acquired by him, the money involved in the transfer amounting to $595,000. The plant of the company will be near Round Bottom, and at the same time it is likely that a producer gas plant and a glass plant will be built near the coal operation.

Development work has been started at the newly completed Byrer plant of the **Fairmont-Kittanning Coal Co.**, four miles from Philippi. Kittanning coal will be produced. The president of this company is J. E. Gaskill of Fairmont.

The Nelson Fuel Co. of Lewisburg, the **Imperial Smokeless Coal Co.**, the **Greenbrier Smokeless Coal Co.**, the **Marguerite Coal Co.** and the **Frances Coal Co.**, the last named being controlled by W. E. Deegans and associates, will soon be operating in the Meadow River territory, one of the few remaining undeveloped fields in the New River region, there being nearly 200,000 acres in this section, only about 10,000 of which will be developed at the outset. The property to be developed has been leased from the **Gauley Coal Land Co.** The outlet from the Meadow River territory will be by way of the Greenbrier & Eastern Ry., now nearing completion.

Further development of Monongalia County coal land will follow the organization of the **Acme Coal, Oil & Gas Co.** which has a capitalization of $100,000. Officers of the company will be in Morgantown. Active in the formation of the new company were: E. H. Eddy, Charles C. Robb, G. B. Simpson, J. Minor Dunham and Oscar L. Wilson.

The Stone Mountain Coal Co. which was the first company affected by labor troubles in Mingo County, resumed operations early in February, it being one of the last to do so. It was as a result of the questioning of the right of Baldwin-Felts detectives to evict the miners of this company that the fight at Matewan occurred, in which 10 were killed.

The Coalton Coal Corporation, recently incorporated with a capital of $200,000, has plans under way for the development of a tract of about 500 acres of land in the vicinity of Williamson. An aerial tramway will be constructed at the property. J. T. Jones, Cambria, Va., is secretary and treasurer.

BRITISH COLUMBIA

Several reports are in circulation regarding the development of **new coal areas on Vancouver Island.** One is that 50,000 acres, situated on the island has been acquired by American interests for $1,750,000. It would appear, however, that the deal has not been finally closed, its issue depending upon the results of exploration, prospecting, and some drilling now in progress under the supervision of engineers. W. S. Henderson, president of the Gem Coal Mine Co. and Jewel Collieries of the Drumheller area, Province of Alberta, has been on the Pacific Coast recently and it is stated that he is making investigation with a view to taking over British Columbia coal lands. John Arbuthnot, of Victoria, with whom he spent some time, holds promising coal rights near Nanaimo.

Survey of 2,000,000 acres of mineral lands owned by the **Canadian Pacific Ry. Co.** on Vancouver Island is to be started soon. The work will be carried on by the smelter at Trail, a railway company holding. The company plans to open a smelter on the island and will develop immediately every coal discovery.

The Frazer Lake Collieries, Ltd., has been incorporated with a capitalization of $600,000, its headquarters being in Prince Rupert. This company has been formed to develop and operate coal property situated near Fraser Lake in northern British Columbia. The coal is so close to the surface that a steam shovel may be used in its recovery.

ALBERTA

It is likely that the post of **Director of Coal Operations** in District 18, U. M. W. of A., which includes the coal fields of eastern British Columbia and of the Province of Alberta, will be continued after the forthcoming session of the Dominion Parliament. The intention was to abolish the office but representations are said to have been received both from the miners and the operators protesting against this decision. W. H. Armstrong, the present incumbent, is likely to be called on to continue his duties.

The 1920 output of the Province of Alberta is placed at 6,650,000 tons as compared with 5,022,412 tons for the previous year. This is a new record in the history of the province. A marked increase in the shipments to the Western and Eastern provinces has been a feature of the year's developments.

Personals

E. J. Weimer, who has been in the lead mines in Missouri until recently, has been appointed mining engineer for the large Kathleen mine, at Dowell, Ill., owned and operated by the Union Colliery Co., of Chicago and St. Louis.

C. E. McCarthy, engineer for the Scott-Smith Coal Co., operating a strip mine at Duquoin, Ill., has resigned his position with that company. He has accepted a similar one with a company in northern Indiana.

C. L. Beidenmiller, chief engineer of the Glogora Coal Co., with headquarters at Huntington, has been promoted to be general manager of the same company. This company is preparing to begin production of coal at its new plant on Big Coal River in the near future.

Ernest Deem has been appointed traffic manager of the Amherst Fuel Co., with headquarters at Amherstdale, Logan County, W. Va.

A recent visitor in Eastern markets was **D. A. Quinn,** sales manager of the Central Fairmont Coal Co., with headquarters at Clarksburg.

Colonel C. W. Watson, head of the Consolidation Coal Co., with headquarters in New York City, spent a day or so in southern West Virginia about the middle of January.

J. G. Bradley, president of the West Virginia Coal Association, was a visitor in Eastern cities during the latter part of January.

J. J. Barry, general sales agent of the C. D. Robinson Coal Co., with headquarters in Fairmont, who has been confined to his home by illness for some time, is able to be at his desk once again.

Charles A. Alden and **E. C. Melville,** both of whom are prominently identified with the New England Fuel & Transportation Co., were in Fairmont during the latter part of January.

E. G. Agee, auditor of the Marion Gas Coal Co., who has his headquarters at Greensburg, Pa., paid the Fairmont region a visit during the final days of January.

T. H. Huddy, who recently assumed charge of the operations of the Williamson Coal & Coke Co. at Williamson, was a recent visitor in Charleston.

A visitor at the Cincinnati office of the Chesapeake & Virginian Coal Co. in the last week of January was **George D. Miller,** of the Huntington district office of the company.

J. H. Murray, president of the Clear Creek Coal Co., of Huntington, is spending the winter months at Miami.

D. E. Spangler has resumed his official connection with the N. & W. as general superintendent transportation.

W. B. Gathright, assistant manager of the Louisville division of the St. Bernard Coal Mining Co., of Earlington, Ky., has been made manager of the Louisville division, succeeding **S. H. Newbold,** who becomes agent. Mr. Gathright has been with the company fifteen years at Louisville, and Mr. Newbold for thirty years.

G. C. Weitzell, vice-president of the Pittsburgh Coal Co., and **Albert Brenholtz,** president of the General Hocking Fuel Co., accompanied by their wives left recently for a vacation trip to Panama.

A. B. Rawn, general manager of the Solvay Collieries Co. with general headquarters at Huntington, W. Va. was attending a rate hearing in Charleston, last week.

Traffic News

Public hearing on cancellation of bituminous coal rates from **B. & O. R.R. Tariff, Coal and Coke Series, I C. C., 1923,** of Western Maryland stations, Meyersdale, Pa., to Indian Creek, Pa., and Chiefton, W. Va., to Wyatt, W. Va., as origin stations, was heard at Pittsburgh, Feb. 24.

The Charles Boldt Paper Mills Co., Cincinnati, in a complaint to the I. C. C. attacks as unreasonable the rates on coal from Harveyton, Ky., to Red Bank, Cincinnati.

A hearing has been set for Louisville on March 7, by the I. C. C. on the complaint of the West Kentucky Coal Traffic Bureau, vs. the Illinois Central R.R., and connections, involved through rates from I. C., Western Kentucky mines to the lower peninsular of Michigan, the basis sought being 25c. a ton over the rate contemporaneously in effect from Southern Illinois. The Illinois Coal Traffic Bureau will intervene in the case, in an effort to block the granting of the rate, which would result in competition of the two fields.

No decision has yet been announced of the result of the I. C. C. hearing on **rates from Western Kentucky to southern territory,** in which the West Kentucky Coal Bureau endeavored to show that rates should not exceed by more than 10c. a ton, those from southeastern Kentucky.

In the **Indiana rate case** the I. C. C. has decided that intrastate rates in that state, except rates on coal for distances of 30 miles and less, must equal the interstate rates.

Complaints have been filed with the I. C. C. by the **A. W. Hillebrand Co.,** of New York, against a combination rate of $2.69 on coal from Casselman, Pa., to St. George, Staten Island, N. Y., and asking for a rate of $1.65; against unreasonable rates on coal from mines in Pennsylvania on the B. & O. to Weehawken, N. J., Erie delivery, shipped in 1918 and 1919; and against unreasonable rates on coal from points in Western Pennsylvania to Weehawken.

In the case of the **Hillsboro Coal Co.,** an examiner recommends that the failure of the railroad to class and treat the mine of the coal company as a joint mine while classing and treating other mines at Hillsboro, Ill., as joint mines, subjected the complainant to prejudice and disadvantage.

In the complaint of **Richard Griffith** the I. C. C. holds that the **Jennings Railroad** is a common carrier; that their method of distributing coal cars during a period of car shortage to shippers on their line was not sufficiently systematic to warrant approval as reasonable for the future, but not shown to have injured complainants or to have resulted in unreasonable or unduly prejudicial distribution of cars; and that rates on coal moving from complainants mine to Worth, Pa., were not unreasonable.

For the time being at least no dead freight is to be moved by the Chesapeake & Ohio on Sundays. By dead freight the road means coal, coke, pig-iron and other fuels and metals. This also means a cessation of Sunday shifter service in the various yards of the system.

Association Activities

Sewell's Point Coal Exchange

A meeting of the members of the exchange was held in New York recently, when the old members of the board of directors, with one exception, were re-elected. The one exception was Frank Ellison of the C. G. Blake Co. who resigned and withdrew his tonnage from the exchange. In his place a Mr. Houston of Norfolk was elected as a member of the board, as a trans-shipper.

Smokeless Operators' Association of West Virginia

At the monthly meeting of the association, held in New York, in the second week of February, general conditions in the industry received the attention of members. Although frankly stating that conditions were far from satisfactory yet those in attendance were sanguine of a return to normal conditions within the course of the next few months.

The committee to which was referred the question of the Cincinnati freight differentials reported that it was making progress and would be able to make a definite report within a short time. The same report applies to the question of bunkerage at Hampton roads.

Knox County Coal Operators' Association

The association recently carried in the largest papers of Indiana an extensive advertising campaign in which they went into the question of coal mining in a detailed way. The idea was to give the general public information as to coal production, distribution and costs. Another question regarding coal production and costs dwelt on was the percentage of running time and charts showing the increase in cost corresponding to the decrease in hours of mine operation. The association declared that as far back as November, 1919, it was recognized that the business world could not indefinitely forestall the inevitable period of liquidation and joined with the bituminous coal producers of this and surrounding states in refusing the miners' demands formulated at the Cleveland convention. They predict that coal prices will never return to pre-war level and what is more, coal can not be mined and sold at lower levels than the average contract prices for 1920 as long as the present wage scale for mining prevails. The organization also goes into freight rates, showing the rapid increase from 1916 to the present time, the increase amounting to 127 per cent.

Obituary

Charles Davidson, aged 70 years, widely known in industrial circles, especially in the manufacture of coke, died recently in his home, Connellsville, Pa.

William D. McElhinny, 53 years of age, formerly general manager for the Central Coal & Iron Co., located in Louisville for some years, and general manager of the operations at Central City, Ky., died in New York, Feb. 16.

John A. Carter, president of the Carter Bros. Coal Co., East St. Louis, and president of the Wholesale Coal Dealers' Association, died suddenly Feb. 10.

Recent Patents

Machine for Handling Coal. James C. French, Chicago, Ill., assignor to Frederick C. Austin, Chicago, Ill., 1,357,318. Nov. 2, 1920. Filed Jan. 26, 1918. Serial No. 213,869.

Mine Car. O. J. Zook and John C. Marshall, Butte, Mont., 1,358,678. Nov. 9, 1920. Filed June 7, 1920. Serial No. 387,023.

Mining Machine. Nicola Pedulla, MacDonaldton, Pa., 1,358,984. Nov. 16, 1920. Filed Dec. 22, 1919. Serial No. 346,465.

Coal-Cutting Machine. Alexander Stevenson and Arthur Logan, Glasgow, Scotland. Nov. 16, 1920. Filed Nov. 13, 1919. Serial No. 337,845.

Miner's Lamp. Sam Caserto, Stollings, W. Va., 1,359,330. Nov. 16, 1920. Filed Jan. 7, 1920. Serial No. 349,865.

Tie for Mine Railways. Frank C. Mayer, Bridgeville, Pa., 1,359,413. Nov. 16, 1920. Filed July 30, 1920. Serial No. 400,118.

Regenerative Coke Oven. Louis Wilputte, New Rochelle, N. Y., 1,360,610. Nov. 30, 1921. Filed Sept. 30, 1918. Serial No. 256,201.

Agitating Coal-Feeding Hopper. Robert S. Riley, Worcester, Mass., 1,360,789. Nov. 30, 1920. Filed April 29, 1920. Serial No. 377,640.

Coming Meetings

The National Coal Association will hold its next annual convention at White Sulphur Springs, W. Va., May 18 to 20. For information regarding hotel reservations, etc., address W. B. Reed, secretary, Commercial National Bank Bldg., Washington, D. C.

New England Coal Dealers' Association will hold its annual meeting March 23 and 24 at Boston, Mass. President, W. A. Clark, Boston, Mass.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Windsor Hotel, Montreal, Quebec, Canada. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Canada.

The annual meeting of the **Pittsburgh Vein Operators' Association,** which was scheduled to have been held in Cleveland on Feb. 14, has been postponed to March 14.

Congressional Echoes on Coal Affairs

BEFORE THE HOUSE COMMITTEE OF APPROPRIATIONS in consideration of the river and harbor appropriation bill, General Harry Taylor of the Army Engineers Corps, criticised the New York, New Haven & Hartford R.R. for buying up in 1907 the boat lines in New England and tying them up so as to force all the coal business onto the railroads, which action, he declared, resulted in congestion. He said the road should have turned over the coal trade to the boats, leaving high-class freight for the road. Representative Rogers of Massachusetts, said the railroad was now urging a maximum development of New England waterways for handling coal to relieve rail transportation. Representative Dempsey, of New York, in charge of the bill, and Representative Small, of North Caroline, said the railroads should as far as possible leave the transportation of raw materials to water transportation.

Representative Rogers produced letters from the president of the New Haven road endorsing the Geological Survey's superpower project to save coal, on the ground that it would be an economy in the transportation of coal. General Taylor referred to the coal bunkering facilities at New Haven, Providence, Fall River and other New England ports capable of handling water-borne coal commerce. Representative Small also said that the development of the Connecticut River would enable it to handle coal traffic.

The committee considered the price paid by the army engineers for coal used in operation of their vessels, and it developed that the price was decreasing very rapidly. The committee went into the matter of coal prices for the last two years to show what was paid for coal during the war and what was being paid now. Colonel J. C. Oakes, army district engineer at Norfolk, Va., said the stringency in the coal market was caused by foreign buyers offering high prices—as much as $22.75—which he had refused to pay, obtaining coal for delivery at Beaufort, N. C., at $13.75. He said he was always able to get coal from Norfolk dealers at reasonable prices, the lowest bid last year being $11.75 a ton for Beaufort delivery.

Representative Dempsey said manufacturers in western New York told him they were paying $9.75 a ton for coal, which before the war cost $1.75 or $2, and he did not see hope for some time of reduced transportation costs on account of wage increases. Representative Small did not see a prospect of reducing transportation costs on coal to the consumer except through a larger use of waterways. Mr. Dempsey thought coal in North Caroline should be cheaper than in New York, as it was nearer the coal fields. Colonel Oakes expected the price next year would be between $8 and $8.50. He referred to the increased wages of miners, saying they were receiving three times as much as they did three years ago. Coal formerly mined and delivered at Louisville at $1.10 a ton now cost $4 and $5. Colonel Oakes did not think the high price of $22.75 should be considered as applying to all the country, as he did not think everybody paid that price. He thought industries obtained their coal for between $11 and $13, saying the foreign buyers were the only one buying at high prices, and they offered to pay any price.

Secretary Purse of the Savannah Board of Trade said that that port expects to go heavily into the export coal trade. The Savannah Coal & Oil Co. of the Tidewater Coal Co., of New York, is constructing coaling stations with four units of 7,500 tons each daily capacity and another coal company was erecting three chutes for handling about 10,000 tons a day. French people were interested in the Tidewater Coal Co.

Representative McDuffie, of Alabama, said the government was building a coal terminal at Mobile on the theory that it can be made one of the greatest and cheapest coal ports of the country. The Warrior River tapped some of the very fine coal beds in the Birmingham district, which coal would go to Mobile.

REPRESENTATIVE BLACK, OF TEXAS, has introduced resolutions directing the Interstate Commerce Commission and the Railroad Labor Board to review the decisions of last summer raising transportation rates and wages of rail employees, with a view to their reduction in line with reduction of other commodities and wages in other industries. In a speech in the House urging rate and wage reductions Mr. Black said the cost of coal to the railroads must be reduced, it being one of the largest of the items of rail expense and coal prices remaining out of proportion to the general readjusted prices of the country. "The price of coal to the railroads is entirely too high," he declared. He said there were some coal operators who took the position that it was no affair of the public what the railroads had to pay for coal, but he insisted it was of public concern.

REPRESENTATIVES OF THE SMITHSONIAN INSTITUTION told the House Appropriations Committee that its estimate for coal last year was $6.95 a ton but it had to pay the Government Fuel Yards $10.03 a ton. Chairman Good said public utility representatives had told him that the bottom had dropped out of coal prices and they were getting coal cheaper than last year.

Treasury Department officials said the quality of coal was not as good as formerly, and more coal was required, it containing 20 per cent of ash.

Coast Guard officials said they paid in some cases three times the amount formerly paid for coal and could not obtain contracts. Most of the ships are coal burners, but the new ships are oil burners. It was said the service was at a point where it would soon be unable to operate because of lack of coal, although steps had been taken to reduce fuel consumption, even to the extent of cutting out cruises. Price comparisons were given as follows: Portland, Me., $5.40 a ton in 1915, $12 in 1920; Boston, $4.32 to $18; Pensacola, $3.50 to $18; Key West, $4.72 to $19.

The Coast Guard formerly obtained coal from the navy, but the navy of late has been unable to supply coal on the ground that it could not spare it. Chairman Good said he could not understand the navy's attitude in refusing coal to a similar service. He thought the navy was in league with "interests boosting fuel prices" and criticised it for not "co-operating with the small branches of the service in order to break down this gigantic price combine that seems to have the entire public by the throat." He said the navy had a million dollars for developing Alaskan coal but would not put in a coal-cleaning plant until Congress directed it to do so three years later. Mr. Good also criticised the navy for delay in opening up the vast store of coal in Alaska, which he declared to be of good quality.

SENATOR MCCUMBER, OF NORTH DAKOTA, has introduced an amendment to the deficiency appropriation bill to pay a claim of $26,400 of the Philadelphia & Reading Coal & Iron Co., which has been awarded by the Court of Claims.

DEPARTMENT OF LABOR CONCILIATOR WILLIAM C. LILLAR has suspended his work in seeking an adjustment of the Alabama coal strike situation following complaint to the President by Governor Kilby of Alabama against his alleged biased attitude. The protest was sent to the Department of Labor, which considered the matter in conference Feb. 8, and the result will be that government conciliation will be suspended.

THE CITY COUNCIL OF PORTLAND, ORE., has petitioned the House for regulation of coal prices by the Interstate Commerce Commission.

MARINE CORPS PURCHASES of coal were discussed before the House Appropriations Committee by General McCawley of that organization. He compared prices in 1920 with those in 1919, as follows: Norfolk, anthracite, $7.75, against $6.60; Paris Island, S. C., bituminous, $4, against $2.60; Philadelphia, anthracite, $7.50, against $6.35; bituminous, $4, against $3.10. At the Quantico (Va.) station, wood had been cut and used in place of coal at a saving of $20,000 a month. Coal was not obtained from the navy, but from the mines under contract, and some times lower than navy prices.

Chairman Good said that in the last month or six weeks coal prices had declined, especially bituminous, and the prices at the mines were now between $2.75 and $3 and reports were that a great many mines were shutting down because they could not get orders even at the reduced prices. General McCawley said the last bituminous coal bought at Quantico cost $4.25 a ton.

CAPTAIN WILLIAMS, OF THE NAVY, complained of failure to obtain coal deliveries from a contractor for the Great Lakes (Ill.) naval station. He said it was impossible to require the contractor to deliver more than the daily consumption even during moderate weather, and that the contractor had fallen down on his deliveries. The station had only a ten days' supply and the quality of the coal had been inferior to that furnished last year. The station probably would have to purchase about 25,000 tons in the open market to complete the 75,000 tons needed until June 30 next. The current contract price was $3.47 a ton, or $1 more than the year before, and in the open market coal would probably cost $4.

BOTH SENATE AND HOUSE have passed a bill, which now goes to the President, for the sale of coal on lands of the Choctaw and Chickasaw Indians in Oklahoma.

PERMISSION FOR THE Rolph Navigation & Coal Co., of San Francisco, to sue the government for damages to its vessels for collision with government vessels is contained in a bill introduced by Senator Johnson, of California.

SENATOR WALSH, OF MASSACHUSETTS, has presented to the Senate a petition of the Massachusetts Legislature favoring the creation of a federal agency with power to ascertain the facts and disseminate information on coal and to regulate and control the production, sorting, grading, transportation and distribution of coal to the several states to secure a sufficient supply of coal of good quality at reasonable prices to the consumer.